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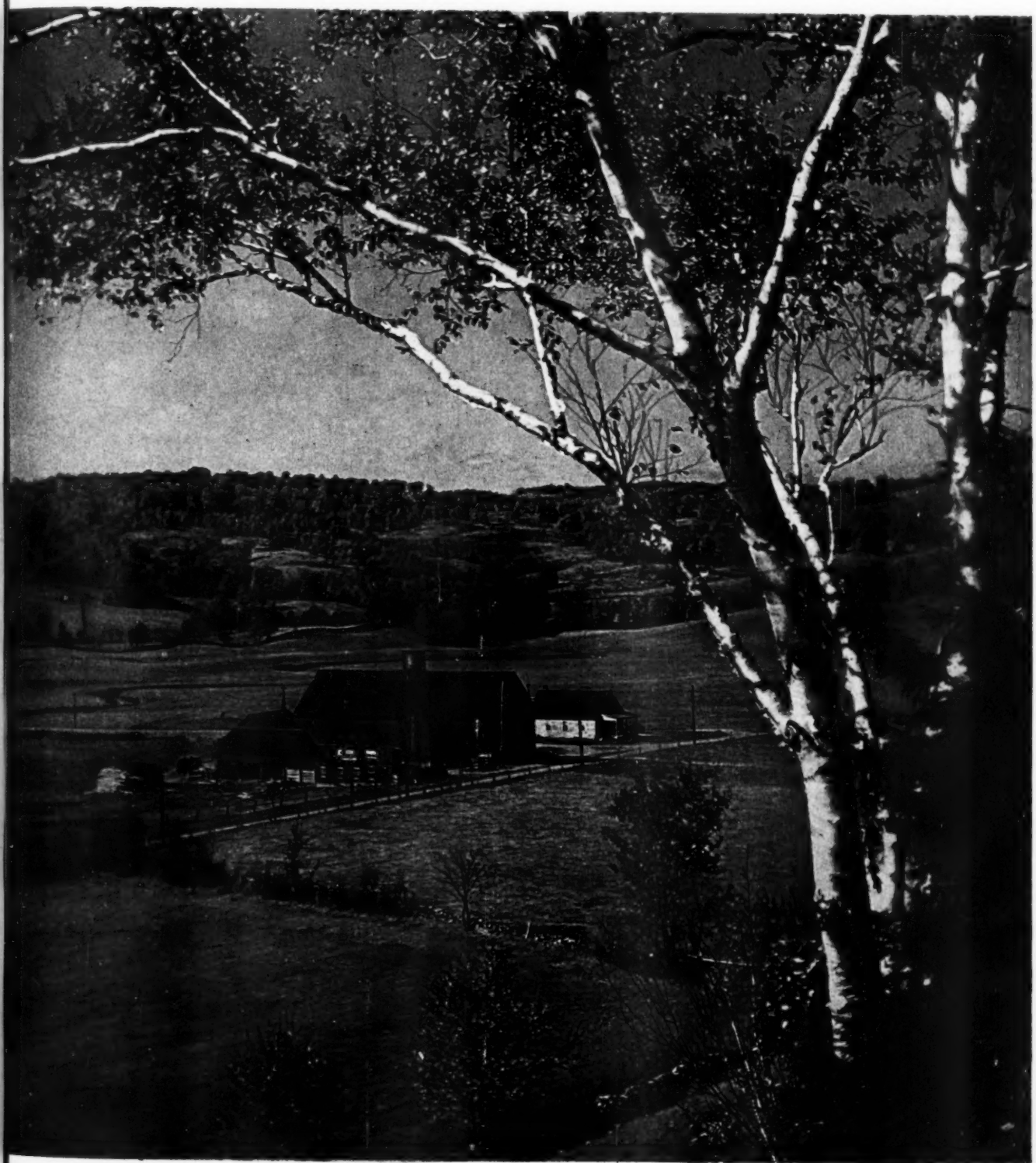

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VOLUME 57
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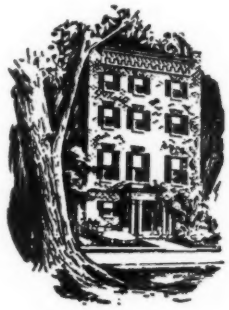
American FORESTS

PUBLISHED BY THE AMERICAN FORESTRY ASSOCIATION



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Cover

Autumn, New England's most beautiful season of the year, will greet members attending AFA's 76th anniversary meeting at Jefferson, New Hampshire October 8, 9 and 10. Typical of the countryside, bedecked in multicolored raiment of frost-tinged leaves and foliage is this view through majestic birches toward neat farm buildings nestled in the valley and the wooded slopes beyond. It was taken by Newell Green of Hartford, Connecticut from a vantage point in Brownsville, a section of Windsor, Vermont within four miles of the New Hampshire border. The area is popular among student and professional photographers. American Forests *is indebted to* Vermont Life, *magazine of the Vermont Development Commission, for this cover scene.*

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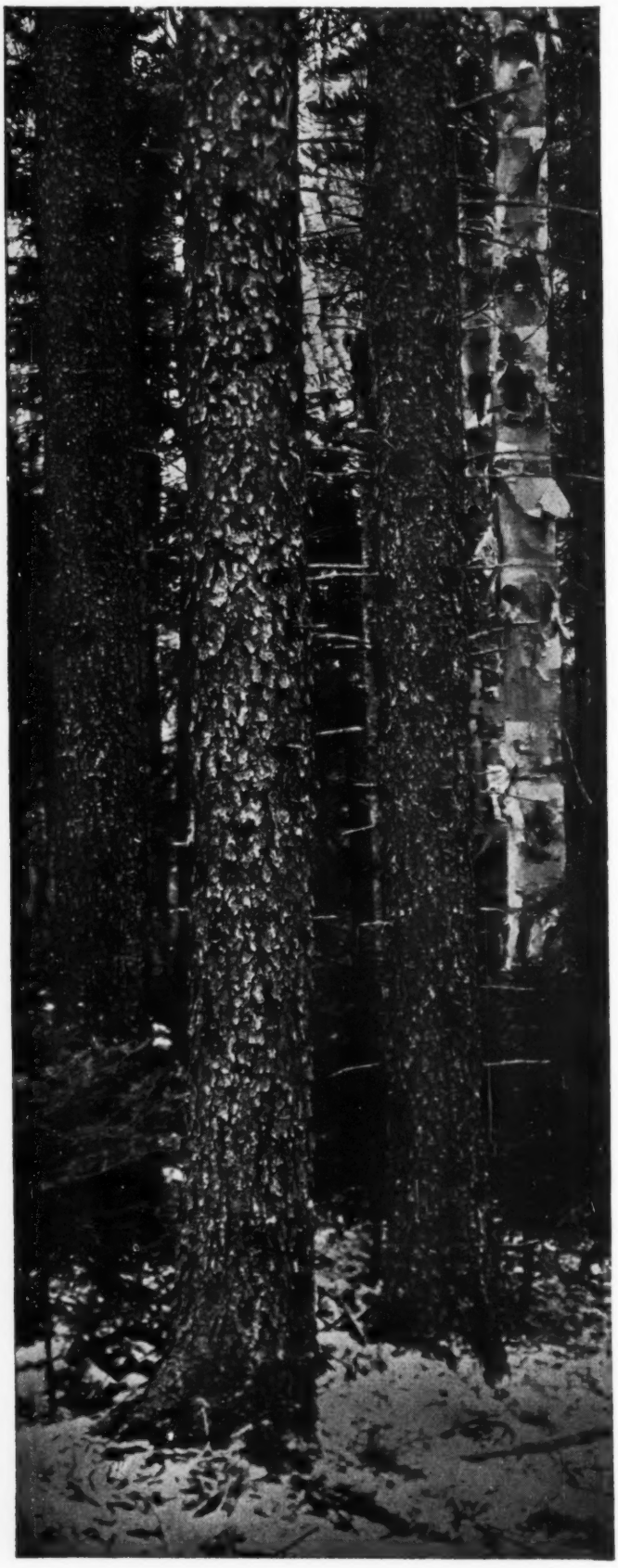
The American Forestry Association, publishers of *American Forests,* is a national organization—independent and non-political in character—for the advancement of intelligent management and use of forests and related resources of soil, water, wildlife and outdoor recreation. Its purpose is to create an enlightened public appreciation of these resources and the part they play in the social and economic life of the nation. Created in 1875, it is the oldest national forest conservation organization in America.



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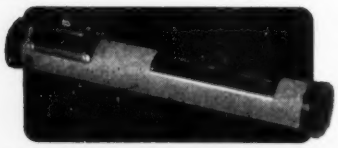

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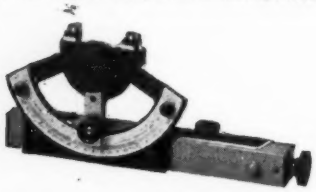

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American FORESTS Forum

Looking Ahead — Newsprint shortages and ever-mounting prices have had publishers in a double dither recently. *American Forests* has investigated their plight, and as a result the November issue will feature a recommendation that *Alaska Can Ease Our Newsprint Woes.* **H. D. Crawford**, feature writer and director of journalism at American University, Washington, D. C., will author the piece. Also scheduled for November is a one-year-after-the-big-hurricane report on New York State's *Adirondack Timber Salvage* by **Tony Roberts**, Utica newspaperman. And there'll be a look-see at Oregon's Tillamook Burn country in its 18th anniversary year by **James Stevens**, author, folklorist and tub-thumper deluxe.

Write Us a Letter—If you need an invitation, here it is. Tell us what YOU would like to read in *American Forests.* It's your $5, so if you aren't getting what you expected, let us know. We are trying to the best of our ability and budget to give you the kind of magazine we think you'll like, but a word from you would help. Do you like *Your Shade Trees,* which became a regular feature in the September issue? Would you be interested in a series telling how to solve your woodlot problems? Do our frequent how-to-do features appeal to you, and what subjects would you like covered? Do you like our occasional fiction stories? Does *Washington Lookout* help keep you aware of legislative doings? Do you expect us to keep you abreast of the major and developing issues in the conservation world through timely articles? Of course, it's impossible to please everybody, but try us. The address is 919 17th Street N. W., Washington 6, D. C.

In This Issue—Eight pages (45-52) are devoted to a report on *The Progress of Forestry, 1945-1950,* a digest of the 92 pages of facts and figures The American Forestry Association has assembled during the past year.

In *Rivers at Our Door* (page 10) **Bernard Frank** and **Anthony Netboy** give us an analysis of the catastrophe which befell the Missouri Basin last July, contributing causes, and a recommended remedy. . . . **Arthur H. Carhart** extolls the value of *Wildlife as a Forest Crop* (page 14). He adds up the cash worth of game for those who have never stopped to think of it that way. . . . For useful information, read: *Your Shade Trees —Let's Plant a Tree Properly* (page 17), our regular feature for homeowners; *Birds in Every Bag* (page 19) by **Nell Womack Evans** is for the family chef; *Putting the Dollar Sign on Decay* (page 28) by **H. B. Steer,** Forest Service economist, offers a convincing argument for using preservatively treated wood; and you can get a lot out of **Henry Kernan's** *A Forester On His Own Wooded Acres* (page 24). . . . For timely reports, read *Mexico Unlocks Its Timber Riches* (page 20) by **Ruth Watt Mulvey**, and *Idaho's Pole Blight Clinic* by **O. A. Fitzgerald** (page 30). There's also another Davy Crockett tale (page 23).

Our Readers Say — From Dr. Paul A. Herbert, director of the Division of Conservation at Michigan State College:

> Two items in the August issue move me to compliment you. I think **John F. Preston's** *Conservation by Decree* is the first clear analysis of certain objectionable phases of Agriculture's Memorandum 1278 that I have seen or heard. He brings out clearly that soil conservation in the U. S. is being hampered in Washington by either muddled thinking or the urge for power, or both.
>
> Your editorial, *Soil, Man and the Gospel,* is most excellent. Certainly much progress can be made if we can link the conservation movement closer to God. I am sure your editorial will help do that.

From David B. Greenberg, Hopewell Junction, New York comes this helpful observation on the August *Nature's Poison Foliage* article by **Ted Bentz:**

> I have studied thousands of plants here on my farm and have found poison ivy with smooth leaves, dull leaves, light green or dark green, small leaves and large, both sometimes red in fall. I have seen it with smooth edged or jagged leaves, with one or more notches on the margin, or none. The only sure way to determine poison ivy is to note that of the three leaves, the center one is symmetrically veined (midrib runs directly through the center), and the two outside leaves are not.

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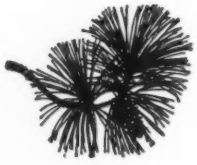

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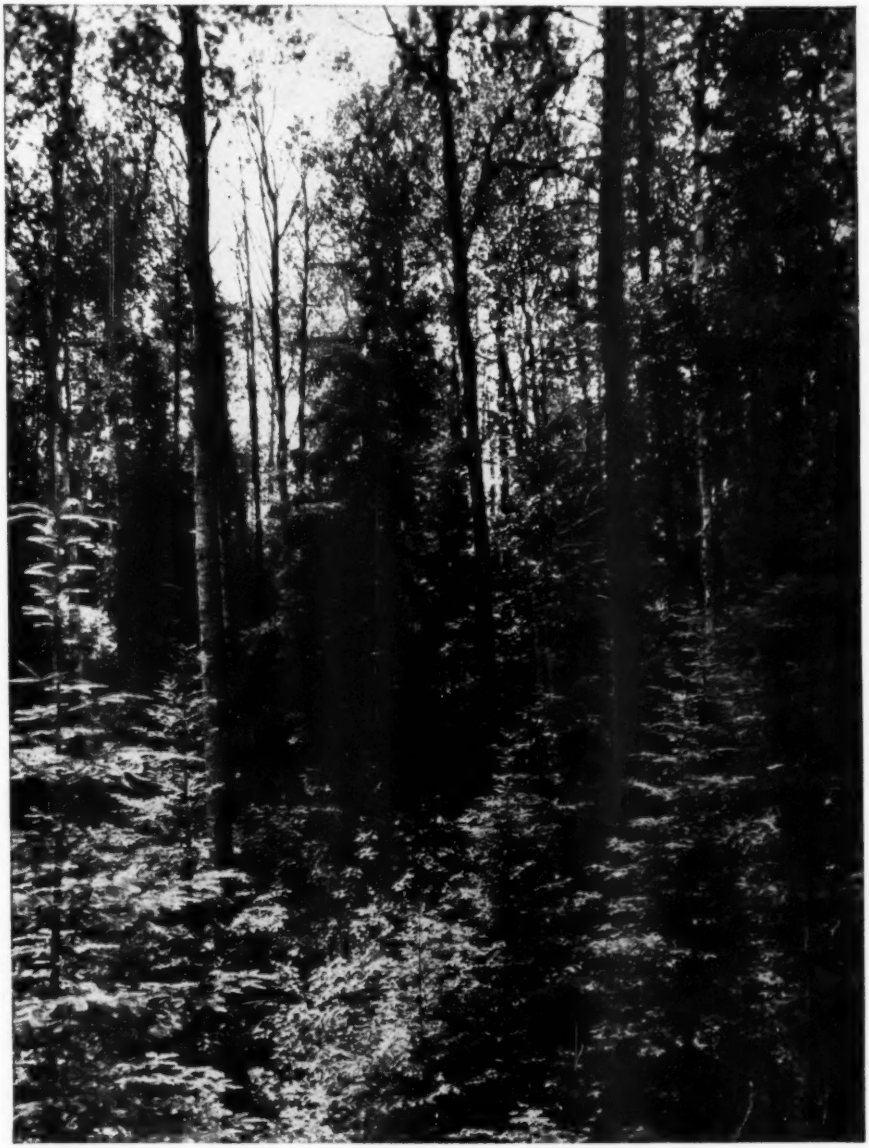

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WASHINGTON LOOKOUT

By G. H. COLLINGWOOD

The fiscal year was two months along on August 31, when President Truman signed appropriation bills for the Departments of Agriculture and Interior. Included in Agriculture's 725 million dollar appropriation was $63,722,308 to the Forest Service, of which $10,750,000 was for cooperative protection of state and privately owned forest lands, and for State Foresters' cooperative aid to forest owners. The total to the Soil Conservation Service is $53,710,491. An addition of one million dollars for control of spruce bark beetle in Colorado brought the appropriation for the Forest Pest Control Act to $2,700,000, which was scarcely half the Budget estimate. White Pine Blister Rust control funds are $3,300,000, including $505,000 for protection of lands administered by the Department of the Interior. These items, together with $6,372,800 for the Department's part in the flood control program, allow $129,805,599 for the forestry and soil conservation programs of the Department.

The 511 million dollars appropriated to Interior includes $7,722,605 for the Bureau of Land Management and $700,000 for access roads to timber on the O and C lands. Protection and management of forests under the Office of Indian Affairs is to get $10,921,360 out of $41,824,750 appropriated to the Bureau. The Fish and Wildlife Service receives $6,678,196 and the National Parks Service $7,735,000 to cover all their activities.

An 18-page bill to reorganize the Department of Agriculture according to recommendations of the Hoover Commission includes five lines which may revive long smoldering arguments as to scope and departmental location of the Forest Service. At issue is Section 7 (a) (1) in S. 1149, introduced by Senator George D. Aiken, of Vermont, with an impressive group of senators representing both political parties. As recommended by the Hoover Commission, this section would transfer "from the Department of the Interior to the Secretary of Agriculture the functions of the Bureau of Land Management (except as respects mining and mineral resources) and the functions of the Secretary of the Interior in relation thereto."

Hearings before the Senate Committee on Expenditures in the Executive Departments opened on August 29, with Senator John L. McClellan, of Arkansas, in the chair. No section demanded more attention than the five lines in Section 7.

Referring to a recommendation by William F. Finan, Assistant Director of the Bureau of the Budget, against the interdepartmental transfer and the need for continued study to find the best possible solution, Mr. Brannan pointed out that the responsibilities of the Department in forestry and grazing, as carried out by the Forest Service, go far beyond administration of the national forests. "They include," he said, "both leadership and responsibilities for program administration with respect to all privately-owned forest and range land which contain the bulk of the forest and range resources of the country."

Continuing, he said, "The Department administers the cooperative program with the states in the protection of private forests from fire, insects and disease, and in the stimulation of reforestation and good forestry practices. . . . Whether we have in the future an abundance or scarcity of products from forests and grazing lands depends chiefly on a coordinated program of conservation for both private and public lands. It does seem logical that the major purpose these lands serve, rather than ownership, should be of controlling importance in considering organization."

The Secretary's statement was supported in detail by Chief Forester Lyle F. Watts, but it remained for Dr. Walter H. Meyer, of the Yale School of Forestry, appearing in behalf of The American Forestry Association, to speak out for the proposed transfer. "The Association," said Dr. Meyer, "has held consistently that federal forestry should be contained within the Department of Agriculture and still holds to that point of view." In support of this, he suggested expanding the five lines to include the following: "The functions of the Bureau of Land Management as transferred shall be combined with those of the Forest Service into a Forest and Range Unit, which together with the Soil Conservation Service shall be included as autonomous units in the Agricultural Resources Conservation Service, and none such units shall be subordinate to any others. . . ."

The transfer was also supported by representatives of the General Federation of Womens Clubs, the Association of State Foresters, and the Chamber of Commerce of the United States. William B. Wright, ranch manager from Nevada, said the Chamber favors a combined Forest and Range Service in the Department of Agriculture, providing portions of the Taylor Grazing Act protecting the property rights of livestock owners be transferred with the lands.

The Secretary of the Interior was quick to oppose the transfer:

"The Department of the Interior is an agency whose principal functions are directed to the conservation and development of the natural resources in federal ownership or control. . . It is and always has been the principal arm of the federal government for administration of the public domain. Through several agencies of which the Bureau of Land Management is only one, the department now manages about 591 million acres in the continental United States and Alaska. Approximately 481 million acres are handled by the Bureau of Land Management. The remainder includes 22 million acres in the National Park system, 14 million acres in Reclamation withdrawals, 60 million acres of Indian lands, and 14 million acres in Wildlife Refuges—a total of 110 million acres. These latter areas would continue as a responsibility of the Department of the Interior even if the Bureau of Land Management were transferred elsewhere."

To this he added, "If the responsibility for minerals management and disposal were separated from the responsibility for surface resources, costly duplication of records and numerous opportunities for error would be inevitable, since the existing public land title records are physically incapable of division into mineral and non-mineral records."

Secretary Chapman concluded with a plea for a single agency whose objectives are centered on the administration of natural resources. "The obvious benefits of having natural resources administered in one department," explained the Secretary, "include uniformity of administrative policies and regulations, facilitation of a program to eliminate conflicts of laws, changes in boundaries of administrative units to reduce costs of administration, and simplification of dealings with the public."

The Secretary declined to name the agencies which he would include in such an overall unit for administration of natural resources, by saying that he is now working on a memorandum describing his ideas for a Natural Resources Department, including all the government agencies which he believes should be combined.

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Rivers at Our Door

By BERNARD FRANK and ANTHONY NETBOY

It's high time we averted disasters like the billion-dollar Missouri Basin flood with an integrated program based on know-how, not politics

THE ebb tide of any staggering catastrophe brings out the inevitable "I Told You So'ers," the eager "I have a Plan'ers" and a maddening breed willing to "Let George Do It." The billion dollar Missouri Basin flood is no exception. At the risk of being typed in the middle category, let's attempt an objective analysis of the problem, causes and effects and the more lustily backed plans. Then let us make a recommendation of our own.

But first let's count the tragic toll. Scores of lives were lost during those night-marish weeks in July as water-soaked levees gave way, dams burst and creeks swelled into rivers which covered their valleys from bluff to bluff. Large parts of Kansas City were inundated, the Kansas River leaving behind more than 12 million tons of silt and rubble.

Nearly 11 square miles of this metropolis were flooded, in places several feet deep, as the waters rose about 35 feet above the low-water mark. At Topeka, 7600 homes and scores of business and industrial structures were inundated. At Lawrence, Kansas, 2000 persons were made homeless when 500 dwelling units were washed away. At Manhattan, almost in the very center of the storms that produced the floods, the entire business section and half the residential area were wrecked. Five thousand persons were displaced here alone.

At Ottawa, Kansas, on the Marais des Cygnes (Osage) River, the entire downtown section was waterlogged, and over a thousand homes were damaged. Altogether some two million acres were inundated in Kansas and Missouri, and many thousands more in Oklahoma, and over 180 thousand persons stranded or driven away from their homes.

Preliminary estimates by the Corps of Engineers put the direct downstream damages from the rampaging Missouri and Arkansas River tributaries at around a billion dollars. Upstream losses to farm property and crops and to the land itself are estimated by the Soil Conservation Service at 412 million dollars more. Nobody will ever know the full extent of the disaster; such things can only

be guessed at. But the year 1951 will go down as the biggest flood year thus far in American history.

On August 21 President Truman asked Congress for an unprecedented appropriation of 400 million dollars to help the flood-battered communities. The money would be used to pay flood victims in Kansas, Missouri, Oklahoma and other states for part of their losses, and to help states and cities in their rehabilitation programs.

Further heavy rains early in September again caused the Kansas and Missouri Rivers to overflow. Four to six feet of water covered the lower flood regions.

I

What had happened to cause all this? The previous spring saw much more rain than usual. The watersheds of the rivers in Missouri, Kansas, Nebraska and Oklahoma had one of the rainiest seasons on record. During May, Kansas rainfall was nearly 6.5 inches or 170 percent of the average for that month; June rainfall was 9.6 inches or 242 percent of normal. It was the wettest June in 65 years. By July the soil was thoroughly soaked and the streams were bankfull. Then came the incessant and overwhelming downpours. From July 9 to 12 some sections of eastern Kansas received as much as seven inches of rain in 24 hours.

PRESENTED HERE is an objective analysis of an extremely pressing problem by an author team which has won many supporters through their book, *Water, Land and People*, and through other writings. Bernard Frank is Assistant Chief, Division of Forest Influences of the U.S. Forest Service. Anthony Netboy is a former Forest Service editor.

Demands for action to stave off such disasters came quickly. Kansas cities demanded to know why the flood-control works built to protect them were suddenly rendered ineffective. The residents of Topeka who found the river on their doorsteps repeated the clamor. So did the farmers whose crops were washed out, the railroad executives whose tracks were obliterated, the hundreds of factory owners whose plants were submerged and machinery ruined, and other thousands of dazed citizens who lost their possessions in the virtually unparalleled catastrophe.

Engineers snapped quickly to attention and gave reassuring answers. They said, "Kansas City, Topeka, Lawrence and other towns were inundated because we don't have enough reservoirs and other flood-control structures. Give us more funds to build the engineering works we have planned for the Kansas and other rivers and all will be well. We can bind up the mighty power of untamed rivers with walls of concrete and steel. We can throw up breastworks along the Missouri and its more truculent tributaries and assure you people living or working on the floodplains that no matter how much rain will fall you will be safe. Just leave the matter to us."

Wide World, Inc. Photos

Railroad tank cars float in circle in industrial section of Kansas City

Flood-created fire hazard—oil flowing from a demolished storage tank

Land scientists took another tack. Addressing the engineers, they said, "You fellows are looking only at the rivers where the waters ultimately collect and wreak their vengeance on the works man has built. You fail to look upstream. There, far above the rivers, floods are born. Headwater areas carry the seeds of disaster. You people down below—in Kansas City, Lawrence, Topeka and throughout the floodplains — forget that the lands upstream hold the key to your fate. If these areas are not well handled — abused by careless

Wide World, Inc. Photo

Railroad gondola cars were lined up on a bridge near Kansas City, Kansas, in an effort to keep the span from being carried away by onrushing flood waters

farming, by grazing without regard to the soil—the watersheds are upset.

"And over the great spread of the Missouri Basin you will find large areas in crops, grass, and forest that are in bad shape from long abuse. There the soil has been terribly bled. Erosion is rife. Even when rainfall is normal in amount and low in intensity, water and soil flow off the hard surfaces of the land. Streams are foul and filthy with mud.

"Engineering works alone will not permanently prevent floods. We must restore the watersheds to good health before we can assure downstreamers any kind of lasting safety. No matter how many dams and levees and other concrete or earthen structures we build, they will eventually fail if the lands upstream are not properly repaired and put to uses that protect the soil.

"Remember that this flood left 128 million tons of displaced soil in downstream reservoirs already built and at the sites of reservoirs now authorized to be built; and that many million tons more were deposited on rich bottomlands and their maturing crops.

"In the long run, safety from floods means that surface runoff and the silt it carries from lands above the mighty reservoirs must be held to the minimum. Rains must be absorbed in the ground to the utmost extent possible, and that can only be accomplished if the soil is kept porous, if its capacity to take in, store, and release clean water is fully developed, and if its full cover of grass, shrubs and trees is brought back wherever possible."

And so the debate has run since the waters have receded, with politicians generally uttering weighty pronouncements, and dam builders asking for greater appropriations from Congress, while the people who seem to have the fundamental answers—the scientists who have carefully studied water, soil and plant relations and know how floods start and how their harmful effects can be lessened—are crying as usual in the wilderness.

II

As a matter of fact, the cumbersome Missouri Basin is a prime example of our supreme confidence in the ability of engineers alone to find simple cure-alls for our flood problems. The need for heroic flood-control and water conservation measures in this region gave birth to one of the most ambitious programs ever tackled by any nation. This program is commonly dubbed the Pick-Sloan Plan, named after General Lewis A. Pick, (now Chief of the Army Engineers) and W. G. Sloan, formerly head of the Bureau of Reclamation's Missouri Basin program.

As presently envisaged the plan contemplates the eventual construction of:

1) Over 150 reservoirs to hold back floodwaters and permit their release as needed for many purposes, mainly irrigating farmlands, producing power and maintaining navigation. The combined capacity of these reservoirs—122 million acre feet—will be greater than the annual flow of water at the mouth of the Missouri.

2) About 150 irrigation projects, embracing thousands of miles of canals and related facilities. These will irrigate about five million new acres, provide supplemental water for about a half million more acres, and bring water to thousands of farms and farm homes which are susceptible to periodic droughts that occur in the Missouri Valley.

3) Hundreds of miles of flood-control levees and dikes.

4) Some 48 hydroelectric power developments with a possible capacity of over 2,900,000 kilowatts and thousands of miles of transmission lines.

5) About 760 miles of uniform river channel for low-cost navigation.

Approved by Congress in 1944, the Pick-Sloan Plan is now estimated by its sponsors to cost over five billion dollars, (including non-federal contributions) with outlays to date totalling about one and a fourth billion dollars. Since such programs have a habit of fiscally ballooning, it is possible that the eventual outlays may run to 15 or 20 billion dollars. About 25 percent of the work has been started, so it will be many years before the Missouri Valley can expect the full flood-control and associated benefits.

The Pick-Sloan scheme has been severely criticized by competent experts. The Hoover Commission task force observed that "the program as a whole has not been properly evaluated in terms of the national interest. . . . It has been planned very nearly backward. . . . The big dams and other engineering structures . . . were planned without reference to the multiple demands for the same water. . . . The result of this order may be the flooding of good agricultural land . . . (and) the construction of navigation works which offer no assurance of achieving the end sought by the region."

In their haste to put the program across, the proponents brushed aside the advice of soil conservationists, agronomists, wildlife and recreational experts and other land-use specialists. In short, it appears to many that Congress was pressured into the deal in order that other government agencies would not have time to expose its serious weaknesses and suggest a more balanced approach. Thus the 1951 report of the President's Water Resources Policy Commission for the Missouri River Basin states that "one important phase of the program is far behind, because construction of water projects has moved ahead of watershed management programs."

III

An adequate solution to the staggering land-water problem in the Missouri Valley, parts of which suffer from too little water and parts

from too much, requires an integrated program of downstream and upstream projects. This was abundantly made clear by the President's Water Resources Policy Commission. It is not too late to launch needed upstream work.

The Department of Agriculture has sketched out a multi-purpose conservation program, including watershed flood-control, just as vast and epochal in its way as the Pick-Sloan Plan. It is designed to reduce the volume and turbidity of runoff and the speed with which water moves into the streams and rivers, so that even if floods develop they can be controlled more effectively and carry much less harmful silt to be deposited when they reach the dams, dikes and other installations built on the larger streams.

Among many other measures it calls for the building of 14 to 16 thousand small upstream dams; 400 thousand farm ponds; reseeding of 17 and a half million acres of badly

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Soil Conservation Service Photo

Heavy surface runoff from the torrential midsummer rains greatly deepened these gullies near Roxbury, Kansas, one of the areas hard hit by the flood

Well-drained terraces like these near Richmond, Kansas, afforded a high degree of protection to many fields despite the exceptionally heavy rainfall

Soil Conservation Service Photo

WILDLIFE . . . as

The 45 million dollars in business created annually by big game alone proves our wildlife a major cash producer long overdue for a fair shake on the range

By ARTHUR H. CARHART

IS WILDLIFE a major crop of our public forest lands? There you have a simmering poser which should be brought to a boil around the campstove circuit from bunkhouse to hunting lodge. The reason for putting this issue on the front burner is simple—a 45-million-dollar clincher.

This eight-digit sum is the most recent estimate of the commerce-creating value of big game alone harvested on national forest properties during a single year. The stumpage value of all wood products harvested from these areas in 1950 was slightly less than 31 million dollars. Yes, even by cold cash comparison wildlife is a major crop of our public forest lands. And the 45-million-dollar estimate is a conservative one. It is based on a minimum expenditure of $125 for each of the approximately 356,000 big game animals bagged in a year.

It may be argued when comparing the stumpage value of wood products and the commerce-creating value of big game animals that as the wood harvest is processed it is multiplied by about ten times the stumpage value. It is equally as valid to argue that the initial expenditure of the hunter — putting new dollars into circulation within a community — turns over many times, compounding

Rustling natural food on heavily grazed lands, the deer finds little but the leftovers

as a Forest Crop

the flow of cash in the area.

Nor is the big game value in resulting business fully illustrated by the number of animals and their cost harvested specifically *on* forest lands. By the time hunting season is open, many game animals have migrated to lower lands, outside the forest. Of the game animals which depend on all-summer range of the forest, probably more are harvested outside those boundaries than within. If total, exact figures were available, the harvest of big game depending on forests for its existence, undoubtedly would underwrite a 100-million-dollar business each season.

But wildlife production from public forest lands continues to be the most under-rated crop from these properties. It is continually getting kicked around.

In the west, there have been the extreme demands of a few livestock operators who want big game animals reduced so their domestic animals may get more forage. Most ranchers, real conservationists, see wildlife as a legitimate product of the public lands. The selfish few grudge every bite of forage the publicly owned game takes.

Congress has given this forest crop the go-by. While appropriating large chunks of cash for other forest production programs, appropriations for management of the forest wildlife crop have been chopped. There is no staff in forest offices to plan and direct wildlife production comparable to those dealing with timber or grazing on the forests.

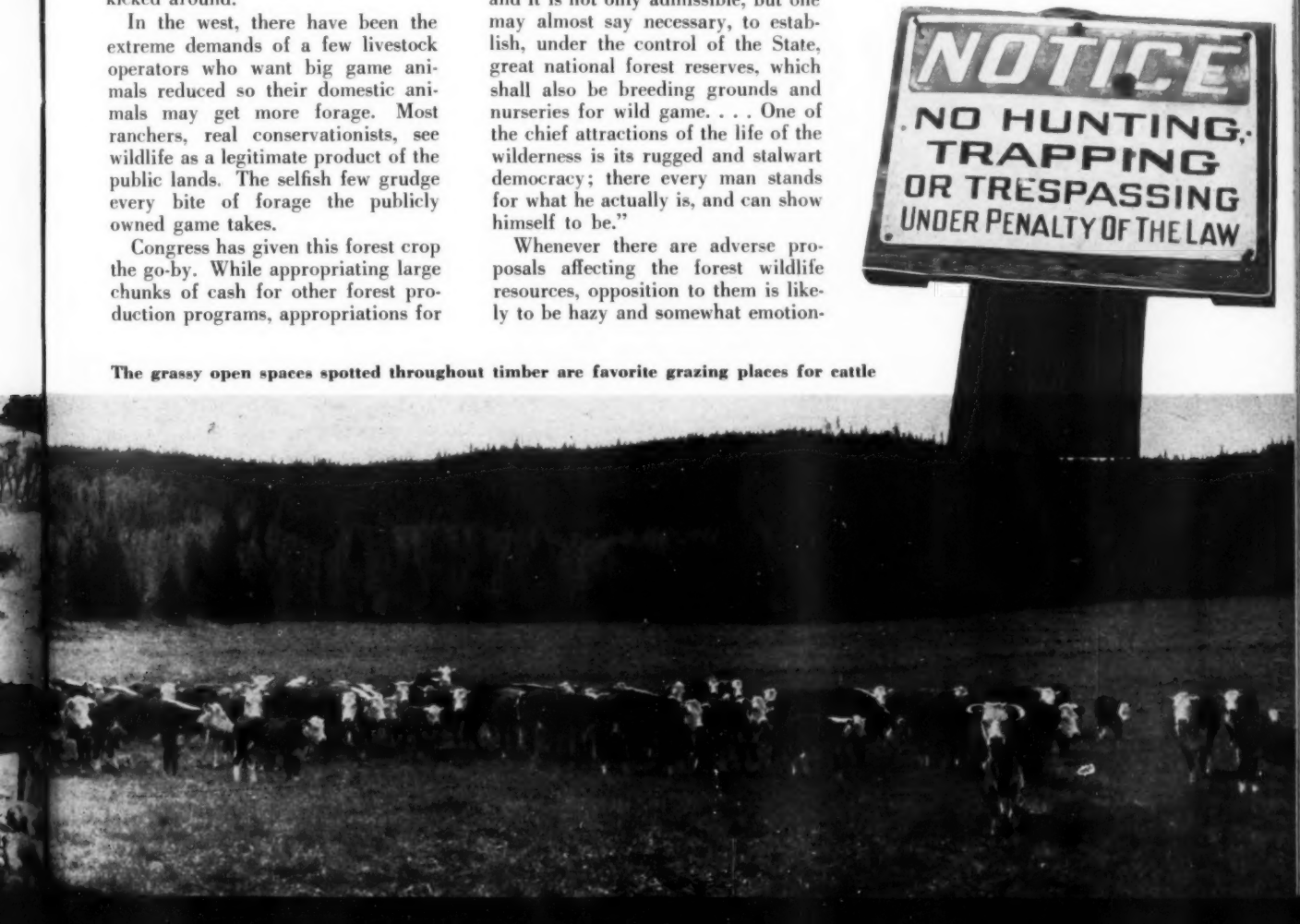
No less a prophet than Teddy Roosevelt forecast the place the national forests should play in producing wildlife. In *The Wilderness Hunter* published in 1893, he set forth his belief even before the national forest system began to be a reality. He declared:

"Shooting in a private game preserve is but a dismal parody; the manliest and healthiest features of the sport are lost with the change of conditions. We need, in the interest of the community at large, a rigid system of game laws rigidly enforced, and it is not only admissible, but one may almost say necessary, to establish, under the control of the State, great national forest reserves, which shall also be breeding grounds and nurseries for wild game. . . . One of the chief attractions of the life of the wilderness is its rugged and stalwart democracy; there every man stands for what he actually is, and can show himself to be."

Whenever there are adverse proposals affecting the forest wildlife resources, opposition to them is likely to be hazy and somewhat emotional, based on sentimental arguments. The stockman who covets more of the public lands forage, then trots out figures on the value of beef, wool, or mutton, waves a T-bone steak declaring it more important than any venison cutlet, and by dollar-talk, beats down any sentimentalist opponent.

Before we get into any more commercial angles relative to wildlife values, there is something inherent in that T. Roosevelt statement which suggests a value in hunting and fishing beyond any dollar measure. It is the building of individual and national stamina in body and spirit which outdoor living supplies. That we never can bring down to statistics.

But taking the economic approach,



The grassy open spaces spotted throughout timber are favorite grazing places for cattle

let's just see where the wildlife may stand in the appraisal of values in crops our forest lands supply.

The most recent census of big game animals on the national forests totals 2,620,000 units. The most abundant are the mule deer; 1,350,000 of them. White tail deer at 631,000, black tails at 254,000, elk at 198,000 and bear at 97,000 follow in numbers. Antelope, bighorn sheep, mountain goats, moose pecarry and wild boar, the latter introduced in Tennessee, North Carolina and California, make up the balance of the total.

The larger game animals are not on the national forests throughout the whole year. Generally, they depend on the forest for summer range. In the west, no small part of the winter carrying capacity also is on public lands; those under jurisdiction of the Bureau of Land Management—in principle, a land-use management organization administering our properties in the interest of all citizens.

The economic value, the business created in a community through harvesting a crop of big game animals, can at least be fairly approximated by what is spent by those that conduct the harvest. There are some figures available on the business big game creates.

Wyoming's major hunting is on public lands: on national forests or properties administered by the Bureau of Land Management. Deer, elk and moose, with a limited number of bighorn sheep in years when the season for this animal is opened, are taken mostly from the forests. The big game of the BLM lands is antelope.

In 1943, the average expenditure of resident Wyoming hunters was $17.66; it wasn't far to hunting grounds, travel was curtailed, and the cost was cut to a minimum. That year, non-residents spent $103.67 per hunter.

By 1948, the latest available figures, the resident Wyoming hunter was spending $34.28 and the non-resident $289.51. Nearly double for residents, nearly triple for out-state sportsmen.

A survey of sportsmen in Colorado just concluded, shows that resident hunters expend $65.96 as they go deer hunting, and $92.49 in taking an elk. Non-resident: Deer $230.71, elk $302.34.

These figures suggest the gross outlay of the 122,000 hunters who went after big game last season in this one state. The total volume of cash put in business channels because Colorado's big game crop was harvested probably reaches $10,000,000. This boost to business follows the tourist season; in effect is further use of capital investment in resort areas.

The individual hunter outlay does not represent the on-the-hoof value of any one big game animal in hunting territory. Only about half the hunters are usually successful. So for every animal harvested, two men were spending double the average per individual hunter. What actually is put out in harvesting one deer in Colorado is at least $125 and for one elk is at least $225.

There is another interesting comparison of animal-unit value. A rough ratio between domestic animal forage requirements and those of game animals has been used. Five domestic sheep will require about the same forage supply as three deer, one elk or one cow.

Generously figuring the market value of five sheep at about $30 per head, the total value of that number would stand at $150. With a single deer having a business-creating value conservatively estimated as $125, the economic status of three deer would be $375. Or three deer produced from a forest range with that $125-per-unit value, would exceed what a two-and-a-half year old, 1000-pound steer would bring if the market was $30 per hundred weight.

There's a market for the forest-produced game, too. Tally of fiscal year 1950 shows 1,350,000 hunting big game, 608,000 hunting small game, and 3,160,000 fishermen in the forests. Any reasonable figure of expenditure for each of these would indicate a fish-game value in those resources of the forest that, so far as business producing values are concerned, would most likely approximate or exceed that of any other class of forest products.

Finally, what Theodore Roosevelt foresaw as a major value in the national forests is becoming more positively true. Our public forests contain the bulk of the wild areas where citizens can hunt and fish without either having expensive memberships in private clubs owning game preserves, or trespassing private lands. These public lands have the particular attribute of supplying forage that is grown on publicly-owned properties to sustain publicly-owned wildlife. In doing so, this wildlife resource underwrites a vast segment of private enterprise.

Hunting licenses sold in the nation now top 12 million; fishing licenses approach 16 million. That is nearly a 50 percent increase over a decade ago in hunting, approximately 100 percent increase in fishing licenses. Counting those who are not required to purchase a license, total participants in hunting and fishing in the

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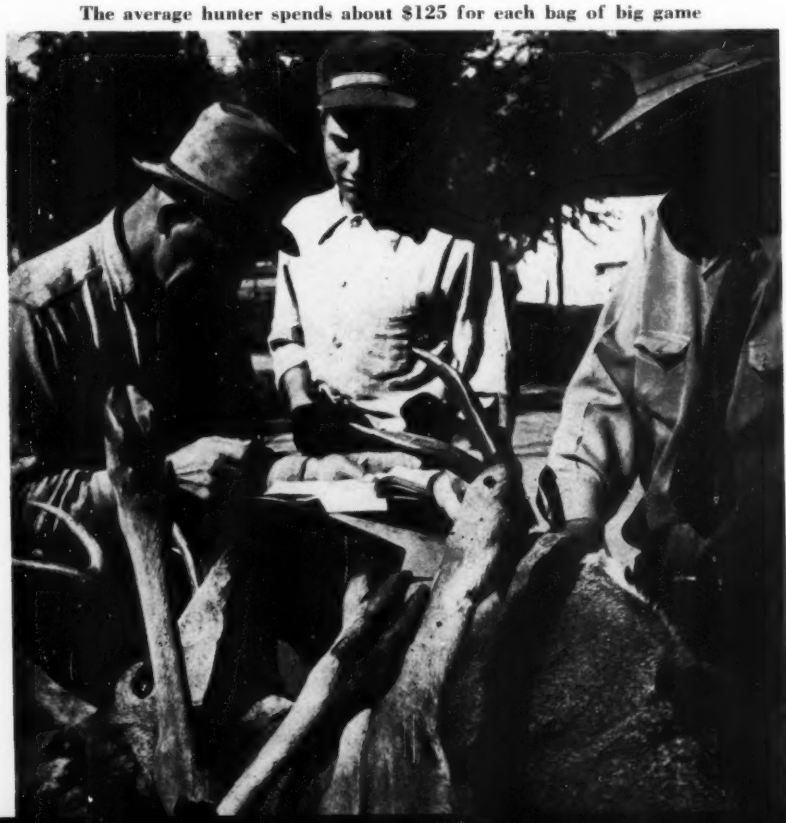
The average hunter spends about $125 for each bag of big game



YOUR SHADE TREES

. . Let's Plant a Tree Properly

OCTOBER is an excellent time to plant that shade tree you thought about last spring but just didn't get around to setting out. Evergreens, too, may be transplanted now with success, especially in the milder sections of the country. Fall planting, carefully executed, permits trees to become firmly established in their new homes before freezing weather. Many nurserymen and arborists prefer it to spring planting.

Not all species are successfully moved at this time of year, however. Included in this group are the magnolias, yellow poplar, yellowwood, sassafras, and others which have a soft fleshy type of root structure. If planting is delayed until real freezing weather has set in, it is well to avoid transplanting all evergreens and any but the hardiest type of deciduous trees as well, since the danger of root injury from freezing is more serious than some seem to think. This is especially true of conifers and bare-rooted deciduous stock. The warm October sun and the fall rains are ideal for fall planting.

If the tree selected is a large one, probably it will be best to leave the planting to your arborist or nurseryman, but a small one will give more pleasure if we plant it ourselves. So let's suppose that our selection is a pin oak about two inches in diameter —a size which we can handle readily.

If we are wise, we will prepare a suitable planting site for the tree before it arrives from the nursery.

If we have to plant the tree in poor soil it will be good judgment to dig the planting hole wide and deep enough to permit replacing the existing soil with several feet of good topsoil. The hole should be dug large enough for the roots to be spread out in a normal manner without cramping or twisting.

As the hole is dug, sod is lifted and carried away, topsoil kept and piled carefully, and subsoil unfit for the backfill is discarded and replaced with good friable topsoil—free from lumps, sods and large stones.

To assure the best possible root growth, many experienced arborists are emphatic on the necessity for adequate humus in the soil used as backfill. Some like to use peat moss—mixed one part peat and two to four parts soil, by volume—while others prefer to add well decomposed leaf mold or well rotted manure to the backfill. Regardless of the organic material used, it must be thoroughly incorporated with the soil and so well rotted that further decomposition will not have a detrimental influence on growth. In poorly drained soils it is important to remember that excessive organic materials may make the soils definitely toxic.

This brings us to an exceedingly

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Planting steps: 1.) tramp soil firmly; 2.) settle soil with water; 3.) provide drain; 4.) keep roots moist

1. GENTLY PULL TREE OVER – FILL IN DIRT BENEATH ROOTS ON ONE SIDE
2. ROCK CAREFULLY THE OTHER WAY – FILL DIRT HIGHER ON OTHER SIDE
3. NOW ROCK TREE UP THE OTHER WAY AGAIN – INSERT PLANK OR DRAG AND THE TREE IS RAISED

Following these three steps will assure you of keeping the tree in perfect condition for planting at chosen site

Birds IN EVERY BAG

By NELL WOMACK EVANS

"BIRDS in every bag" seems to be the promise the state game departments are making hunters this year. If your huntsman thinks a woman's place is in the kitchen cooking his trophies, be prepared to exercise this bit of culinary art, but don't let him cajole you into missing the fun of the hunt.

If you talk big about the ways of the hunter and the care of the game fowl he bags, and come up with a few practical suggestions on the relative merits of hanging or not hanging those fowl; dry plucking or scalding to remove the feathers; judging the age of the game birds; frying or fricasseeing—well, he'll not only let you go along he'll—ah "bag" you to go. And what's more he'll put you to work.

Be not afraid! These rules will befriend you, come pheasant, duck, goose or dove.

About hanging. If you spend the hunting season in the fields and have good luck and more birds than you can conveniently use in camp, hang them by the feet in a cool place free from insects and dust until ready for the trip home. If you have taken along a bolt of cheesecloth, a big needle and string to make bags for your hanging game, it will make a good impression on your companion as to your efficiency, as well as protect the birds. A short hanging period of one to two days will give your birds a "high" flavor; longer hanging period, a "higher" flavor, and there are those persons who appreciate this higher flavor. If you and your hunter don't belong to this high-or-higher flavor school of thought, cook your birds before they reach this peak.

About plucking. Some pluck immediately, some don't. There again it depends on how many birds you get. If you get only enough for supper, scald and pick immediately as you would a domestic fowl. But if you get enough to take home and if home-going isn't for a few days, leave the feathers on, draw, but do not wash the cavity. The moisture from water will start deterioration unless the weather is freezing, and such deterioration will spoil the flavor of your birds.

About drawing. Immediate drawing of the game birds is to be especially desired if it has been shot in the intestines, and if the cavity is wiped out with a cloth wrung out in vinegar the danger of deterioration is minimized. The one exception to the no-water rule in drawing is in the case of the fowl that has been feeding on fish. To remove the fish flavor washing with water is necessary. Dry the cavity well afterward, if the fowl is to be kept a while.

About cooking. Due to their mode of living most game fowl must be reinforced generously with fat. In broiling game fowl the meat can be well stripped with bacon or oiled well, then basted or brushed frequently with melted butter. When fried, game fowl should be cooked in shallow fat, then covered and steamed until tender: this especially if the fowl is old, and in this case a bit of water may be added during the steaming. When roasted the game fowl should be generously stripped with bacon or salt pork, then basted often.

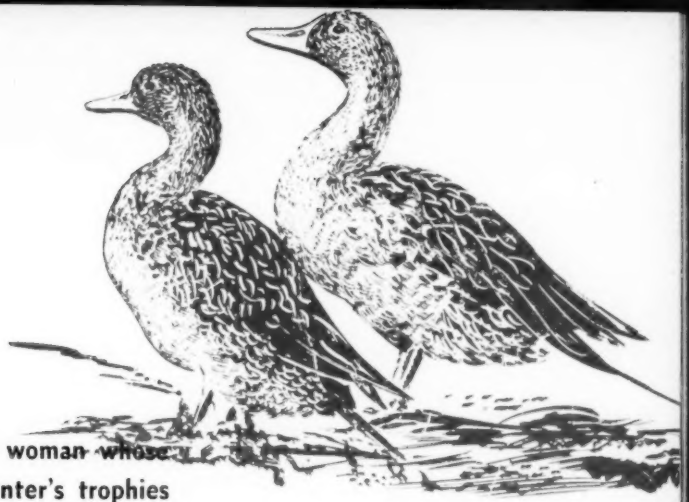
The time of cooking depends upon the age of the fowl. However, for those who prefer the wild gamey flavor appreciated by epicures, the game should not linger long in the oven or pan, and simple seasonings are usually best. For those who like the meat of wild fowl but are not so appreciative of the gamey flavor, more seasonings and longer cooking period will tone it down.

To get specific about cooking, let's pretend we get a wild goose. Here's how to pot roast that bird to perfection: a perfection that will bring you a demand invitation to every hunt.

First clean the goose, wiping out the cavity with a cloth wrung out in vinegar. Then season the goose inside with a teaspoon of salt, a half teaspoon pepper, and stuff with a fruit-vegetable stuffing consisting of two sliced peeled apples, a sliced carrot, onion, and three or four celery stalks. Fasten the opening with skewers and tie wings and legs to body. Next rub goose with butter, season with salt and pepper, and brown in melted butter in heavy skillet. When the goose is evenly browned on all sides, add about two cups water, cover, and cook slowly until tender, about two hours. The stuffing goes in for flavor only and is never eaten.

Pheasant merits the best in cookery skill and since it can be enjoyed so rarely frying in butter seems to be the favorite method of cooking if the pheasant is young. Mature birds may be stuffed and roasted with your favorite stuffing, but the very prize recipe for the older birds is Smothered in Sour Cream.

Cut a three-pound pheasant in serving-size pieces. Season with salt and pepper, then roll pheasant in flour. Heat one half cup butter in a heavy skillet or Dutch oven to brown the meat. Pour over one cup sour



An invitation to the hunt is a cinch for the little woman whose oven artistry brings out the best in the mighty hunter's trophies

cream. Sprinkle the top with a mixture of one cup bread crumbs and one half cup finely cut celery. Cover and bake at 350 degrees F., about an hour or until tender. Remove cover the last ten minutes to brown crumbs. Make gravy in the pan drippings.

Roasting emphasizes the exquisite flavor of wild ducks. Roast them in moderate oven 350 degrees F., until they are well-done and tender. Baste now and then with tart fruit juices, such as a mixture of lemon and pineapple juices. Brown rice stuffing with plenty of onions compliments ducks. For this Brown Rice stuffing use:

1 cup brown rice
½ cup diced bacon
¾ cup diced onion
3 tablespoons butter
1 cup tart apple, diced
½ teaspoon sage
½ to 1 teaspoon salt
¼ teaspoon paprika

Cook the brown rice in boiling salted water until just tender. Drain and rinse with cold water. Fry the bacon, add the butter, chopped onions and saute until browned. Add to rice, with apple and seasonings. Pack into the ducks. This amount will stuff two ducks.

About doves. There are three legal dove species in the U. S.: the mourning dove, the white-winged dove, and the band-tailed pigeon. And though the last is called "pigeon" it is really a dove, and though the publicity given to these game birds is almost nil, they make delicious eating as well as fine hunting. As eating they are especially good in a pie. Boil small whole birds or jointed large birds, in just enough water to cover them, and they should merely simmer until

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Mexico UNLOCKS ITS TIMBER RICHES

By RUTH WATT MULVEY

Modern plants like the La Marqueza attest to industrialization gains

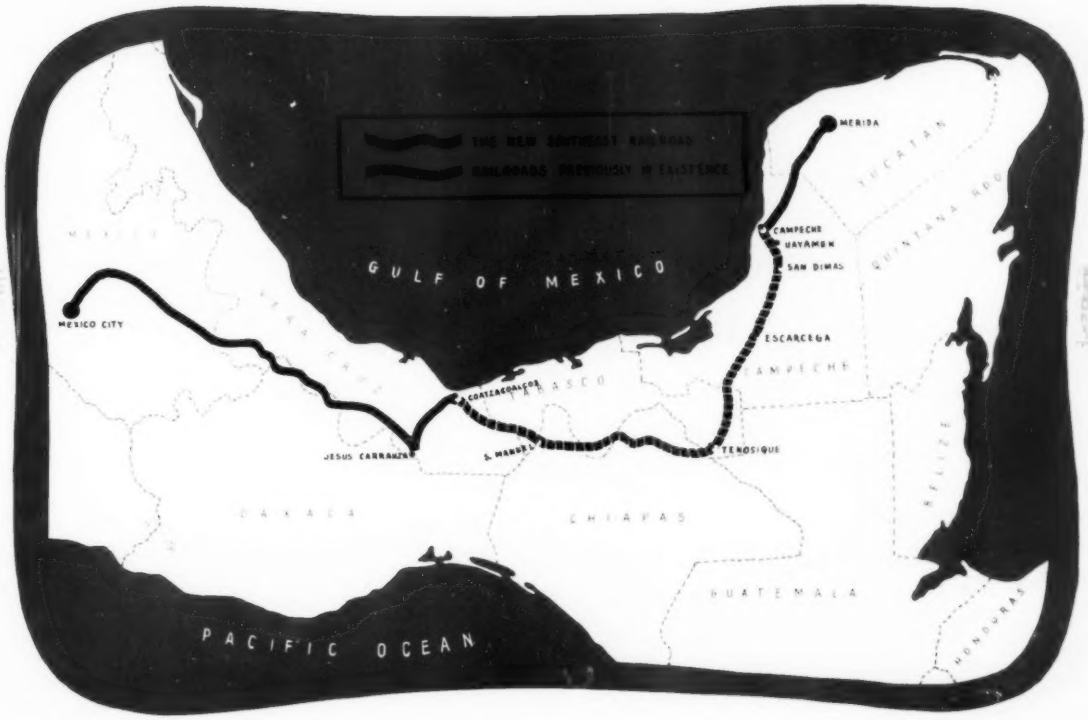
THE familiar cries of charcoal vendors were not heard on the streets of Mexico City last year. Smoke did not rise from the chimneys in the mountain cold nights, and the only feet that were warmed before blazing hearths in the nation's capital were those of persons who could pay a fifth of the minimum daily wage for a single log; or who had managed to outwit "those of the forestal"—jealous guardians of the disappearing central woods.

Early this year a single stroke changed all this. That stroke was the one that drove the last spike in the Southeast Railroad, linking the timber-rich peninsula of Yucatan with northern Mexico and the United States. The newly-completed railroad also took out of isolation the states of Tabasco and Campeche, formerly accessible only by small launches and airplanes. Costing 500 lives and 244 million pesos (28 million dollars), the line has transformed Mexico into one of the wealthiest timber countries in the world.

Mexico last year was in a "water, water, everywhere, and not a drop to drink" predicament. Despite the fact that 15 percent of her land area is completely wooded, no lumber could be spared for building. It simply was not accessible. Today the situation is reversed. Our southern neighbor is in the throes of a timber boom.

Fortune hunters are already on the road south following the trail blazed by Alfredo Medina — "The Crazy One" — whose visionary shoe-string operations in the Yucatan forests have made him one of the wealthiest men in the hemisphere.

Experts at the Bank of Mexico are



Linking the heavily-forested states of Yucatan, Tabasco and Campeche with the cutover north, the newly-completed Southeast Railroad solves wood worries south of the border. The boom is on

Some of the world's finest mahogany trees flourish in jungles of Tabasco

carefully reviewing forestry inventories and compiling statistics for export duties and domestic taxes.

In the middle of the jungle nowhere, factories are going up, cities are springing up like mushrooms. Yes, the boom is on and who cares about oil and gold and uranium with fabulous riches to be discovered on every square foot of tropical earth: mahogany, Spanish cedar, primavera, macaya, walnut, white oak, rosewood, basswood and the other varieties which mean pesos in the bank.

And, with the Cristobal Colon highway penetrating the heart of the forest land down to the Guatemala border, the final impediment has been removed.

For hundreds of years, the lumber potential of tropical Mexico has been well known. As a matter of fact, ever since Cortez made his fabulous march to Honduras a few years after the Conquest. For the past half century, the knowledge has been a frustrating fact to empire builders. They have been living with such survey reports as that made early in the 1940's by the Mexican Federal Forest Service, which calculated that the section known as La Providencia in the State of Oaxaca contained sufficient oak, white and yellow pine and mahogany to supply the building needs of Mexico for the next two centuries.

But, without transportation it was of no more consequence than the northern desert.

Because of the enormous extension of Mexico—a latitude range of 1200 miles, longitude 2000 miles and an altitude range of 18,000 feet—there is great diversity in the character of its forests. Lumbermen divide them into three general classifications: the tropical hardwood forests, the subtropical transition region and the conifer forests of the Sierras.

The tropical forests occupy narrow strips of land along both coasts, but they widen to the south and reach their greatest extension and best quality from the vicinity of the Isthmus of Tehuantepec east and south to the border with Guatemala. Usually, the trees are extremely large, frequently with diameters of from four to seven feet. It has been conservatively estimated that the better stands run from 10,000 to 15,000 feet per acre.

This tropical forest land, almost

entirely virgin, represents 59 percent of the total wooded surface of the Republic.

Above the tropical forests on both the east and west divides, the sub-tropical transition forests extend up to about 6000 feet elevation where the immense pine forests begin. The principal woods in this sub-tropical zone, which represents about 15 percent of the wooded area, are sycamore, cherry, walnut, ash, elm and oak.

From an elevation of 6500 to 10,000 feet, the pine forests predominate, although red and white oak stands are also found here. From 10,000 to 18,000 feet are more pine and fir stands. Although of lesser importance financially, the more highly elevated forest lands have been exploited thoroughly because of their accessibility.

In every way more important, however, are the tropical forests just opened to exploitation.

It is conservatively estimated that there are more than 37,743,823 acres of tropical forest containing fine woods, hard common woods and soft common woods. A tree census shows that there are approximately five trees of such fine woods as mahogany and cedar to a hectare (a hectare equals 2.47 acres), totalling 76,404,675 in the area. Total number of hard common woods, calculated on a basis of 50 trees a hectare, is 764,046,750 and there are about 1,375,284,150 soft wood trees in the tropical area.

A comparison of Mexican forestal resources with those of the United States, shows the wooded surface of Mexico contains 25 percent of "coniferous forests" and 75 percent of "leafy forest" while in the United States the ratio is exactly the reverse. Although the United States has a wooded surface of conifer forests 20 times greater than Mexico, in leafy varieties the difference is only twice as great. Assuming that increases were equal in the two countries, in Mexico it would be possible to intensify without danger to the conservation of the species production to the point where it would be 500 times greater than that which is now obtained.

That Mexico has become aware of the monetary value of its forests is clearly evinced in export prices for fine woods during the years 1947 and 1948. In 1947, 37,953 tons were shipped out of the country for a return of 2,987,000 pesos. The following year, only 9052 tons were exported but the return on that tremendously diminished amount was 2,521,000 pesos.

It may safely be presumed that prices for 1951 will be even higher.

One very good reason for the reduced exports of fine woods during the past few years is that Mexico's industrialization program has opened new domestic methods of utilization. The furniture industry is booming with ready markets at home and in the United States and other countries for the exquisite household furnishings which are characterized by their modernistic lines and use of light-colored woods—cedar, primavera and magnolia.

Not even the U. S. government duty of 40 percent on chairs and 22.5 percent on other items has proved a deterrent. Custom built by skillful native craftsmen and mass-produced by natives trained in U. S. know-how, Mexican furniture is in U. S. home owners' minds to stay.

Besides furniture, Mexico entered the plywood market when war-created restrictions on U. S. exports made the pinch felt here. One of the biggest is the plywood factory in Yucatan established by Alfredo Medina and Agustin and Jorge Vales. In that factory, plentiful cedar is used and there is tremendous demand for this fine product.

Furniture and plywood are important and now growing to equal them are the cellulose industry and the pulp and paper industries — all of these reaching the point which will make Mexico free from import requirements. And new outgrowths are the by-product industries — resins, wax, aniline dyes, rubber, chicle, oils, quinine.

In a study made by the Bank of Mexico's office of special studies and by the Armour Research Foundation, tribute was paid to the conservation steps which have been taken to control the exploitation of the timber lands.

Three years ago, a reforestation program was undertaken by the government which has resulted in the planting of 100,000,000 trees annually. First zones were the forestry devastated areas around the river basins of the Puebla and Toluca valleys as well as the Valley of Mexico.

Important features of the reforestation campaign have been:

1.) The planting of trees whose lumber can be used commercially.

2.) Increased cultivation of fruit trees.

3.) Beautification of cities by planting trees and building public gardens.

For several years, regulations have been promulgated for conserving the country's lumber resources. Intensive encouragement has been given the use of oil stoves in place of charcoal burners and, in Mexico City at least, apartment houses must be equipped with gas or oil stoves. Last Christmas, the now-popular Anglo-Saxon Christmas trees were ruled out. And, the only Mexicans who celebrated the December 25 holiday in the adopted gringo way were those who could afford the price of *arboles de Navidad* imported from the United States.

With the experience of devastation

(*Turn to page* 62)

Chicle is becoming a principal product of the newly-accessible territory

Mexico's rubber industry will gain in importance with better rail facilities

In this tenth chapter of a series, Davy Crockett uses a secret weapon to rid the West of a feathered man-eater that flies backward

DAVY AND THE TORNADORIOUS THUNDERBIRD

By JAMES STEVENS

"THIS here thunderbird rooster had a whale of the blackfish breed in his claws when he spied two Tennesseeans high on a mountain in the Oregon wilderness," said Uncle Ben Cotter. "The men looked, and likely smelled, like tasty morsels to him. 'Tany rate, the thunderbird cached his whale on the mountain top and began to back down to where Chief Sequoyah and Davy Crockett stood froze in their tracks. For such were the famous names of the two Tennesseeans."

Three of us were sitting on a blowdown pine that rested along a rocky shoulder of Cuddy Mountain. We looked out on Wild Horse Creek and Indian Ridge. Over leftward Snake River ran north for Hell's Canyon. Old He of the Seven Devils was in sight. Stacks of black clouds were on the peak. Away on below the pine forests were an eerie green-black under the cloud piles and lightning strokes. The powerful mournful thunder made me feel shivery. I had been out working on my own all this summer of 1904 but I was still only 12.

"Thunderbird," said Frank Silvertooth. "Fire snakes. Coyote, raven and Oleman. Don't talk about the like to me, Mr. Cotter. Old folks' fantasies."

"A prime big word," said Uncle Ben mildly. "You might be right. Don't you have any feelings whatever for what your forebears liked to tell about?"

"While they were gabbing they let themselves be robbed," Frank Silvertooth said. "Me, I've put in with the robber race. My concern is the almighty dollar." Then he let a corner of his mouth make a mite of a grin. "But tell your tale, Mr. Cotter. We've nothing but time to kill. And I *could* get something out of it."

We were on a trip to decide whether Frank Silvertooth would buy into the Cotter logging and mill outfit. For the time being, Frank was hauling lumber down to yards in the Snake River towns while Uncle Ben stayed home to keep his sawmill and the J. I. Case threshing engine that powered it, in working order. Uncle Ben was mighty hard up. His main hope now was to make a partner of Frank Silvertooth, who was a free and independent young Nez Perce Indian. This trip was to look over the prospects and locations of timber that might be bought from the government.

Frank's freighting stock was four blacks and he had them beautifully rigged up in studded harness, goathair plumes and bow bells that were never allowed to tarnish. He had two smart pack mules and a calico saddler. How he could handle horses! An iron bar of a man, hard and tough all through, but not mean—anyhow, not to me. It was due to him that I was allowed to come along on the cruising.

So here we sat on a silvered pine blowdown, eating our cold snacks while the horses champed and snorted in their nosebags. We watched the gathering of the far storm on He Devil. It excited me, like a circus. The black clouds filled out over the mountains. The lightning flashes grew fiercer and redder.

"Tell away, Mr. Cotter," said Frank Silvertooth. "I'm a-hearkening."

Uncle Ben looked doubtful for a minute. Then he brightened and went to talking.

As I remarked in the first place (he said), the sight yonder on He Devil is like unto what Chief Sequoyah and Davy Crockett faced when the thunderbird came backing at them, full speed, all tail feathers spread and whirling.

Now there was a weakness of the tornadorious thunderbird of the

(*Turn to page* 32)

With the pride of proprietorship, Author Kernan looks over some old-growth hemlock in Charlotte Forest, central New York

A Forester

On His Own Wooded Acres

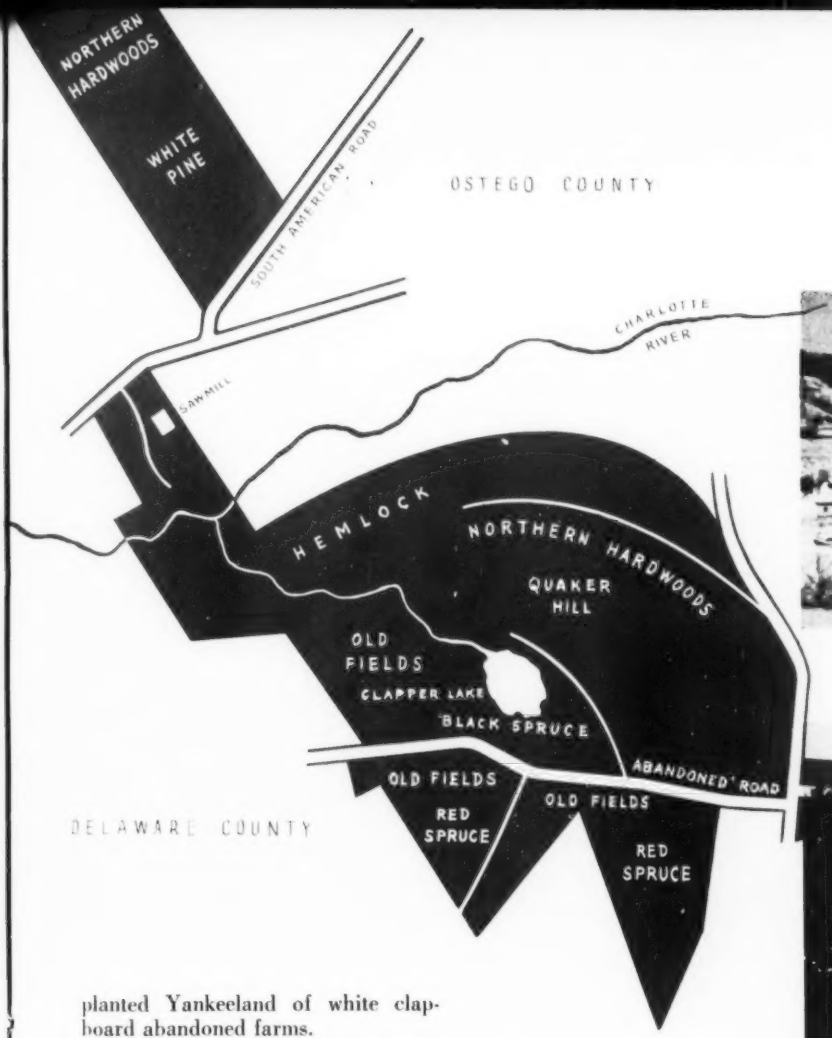
By HENRY S. KERNAN

When a man applies his "book larnin'," his savings and several I.O.U.'s to a personal project, the education often just begins. This is such a story

FOUR YEARS ago sentimental, financial, and professional motives prompted me — a roving and stakeless forester just five years out of Yale—to exchange all my savings and several I.O.U.'s for Charlotte Forest, 1200 acres of idyllic woodland in central New York. I have never regretted the bargain.

To acquire this tract involved some hazards of an *a priori* decision. But thus are taken many of life's most crucial chances, without trial and on the faith that the outcome will depend at least as much upon the chooser as the chosen. Only repetitious trivialities can be thoroughly and previously known. To discover and reveal the inherent worth of forest lands wherever they may be and for whatever purpose they may be suitable—that is the forester's calling.

My chosen acres lie in that part of the Alleghany Plateau which the Susquehanna River drains before entering Pennsylvania. The millions who live and travel along the Hudson and Mohawk Valleys to the east and north know little of this quiet hinterland beyond the metropolitan ken. They often believe that New York is made up exclusively of roaring cities and hectic resorts. Few would turn west from the Hudson and expect to find, beyond the Catskills, a trans-



Sawmill poses problem for small owner

Black spruce on edge of Clapper Lake

planted Yankeeland of white clapboard abandoned farms.

These six counties cover an area larger than Connecticut. They are furrowed by deep, narrow, south-running valleys and broad shale ridges. The former delight in their smooth fields and trim farms, but the rolling uplands between bespeak less of lush prosperity. Their primeval cover of hemlock, beech and maple gave way more than a century ago to the land-clearing vigor of the Yankee immigrants. Their value as farm land survived but two or three generations before fading in the agricultural upheavals that followed the Civil War. Younger sons moved west and left their home acres to picturesque but unproductive invaders: shadblow, hawthorne, pinxter, alder, braken, maple, birch and blueberries.

The climate they left must be loved to be endured. The Springs are often but chill and damp prolongations of Winter, with violent changes that make the maple sap run, but barely hint that warm days will ever come. Suddenly descends a fortnight or so of stifling heat while farmers race for their hayfields, and chokecherries

The Charlotte River near South Worcester, New York

Area boasts thriving growths of birch and white pine

turn crimson along dusty July roads. When August feels frost, the summer is done and soon the glories of Autumn are upon us.

Easternmost of the eight little rivers which spread fan-like over Otsego County is the Charlotte. The local version of this word is "shalot," possibly a slurring from Old England. It replaced the majestic but now meaningless Iroquois "Adaquatangle" as an honor to Queen Charlotte Sophia when George III granted the valley to his Indian Commissioner, Sir William Johnson. Perhaps Sir William chose his patent for the strategic importance of a route connecting the Schoharie and Susquehanna Rivers. Or perhaps he chose it, as I did, for the unspoiled and idyllic loveliness of the scenery.

A mile below the village of South Worcester where the Charlotte crosses my land, it has already run nearly half of its 30-mile course. It is something more than a creek and something less than a river—deep enough for trout, swimming and beaver; shallow enough for rippling white fords and shady stretches below the arching elms, willows and alders.

Such riparian thickets make good cover for deer but otherwise can be counted out for productive use. High timber begins where the base of Quaker Hill turns sharply upward in the first of a series of slopes and ledges that rise to over 2300 feet, 900 feet above the valley floor. The first and steepest is covered by old-growth hemlock.

Directly above this long, narrow belt of hemlock, stands the cream of the Charlotte Forest, about 200 acres of pole-sized northern hardwoods. Straight, tall, clear, fast-growing and dense, they draw upon deep, rich moist soils that have always been forested. They average about ten to 16 inches in diameter and originated 50 years ago after a heavy cutting which removed the primeval hemlock. Such cutting did not favor this shade-loving species and it is now rare. Eighty percent of the volume is hard maple, ten percent is beech, and the remainder is ash, basswood, cherry and white pine.

One side of the stand peters out near the road ascending Quaker Hill and forming the eastern boundary of the property. Here the high timber is replaced by dense thickets of maple seedlings and old apple trees on land that was once cleared.

The western side descends into a gulley through which flows the outlet from Clapper Lake. This tiny waterway is no more than a puckish and bumptious rill whose complete master I am from one end to the other. It leaps daringly off ledges two feet high and chortles while contending with obstacles of pigmy size. Year after year a quota of sweet water is delivered and lost into the sombre flood of the Susquehanna, without pollution, erosion or siltation; without flooding, rampaging, drying or otherwise misbehaving. I trust such good conduct will vindicate my watershed management.

Clapper Lake's 14 acres are as round, smooth, and shiny as a silver dollar. They are surrounded by a "vly," that is, a quaking sphagnum bog which creeps into the waters at an infinitesimal pace. On the one side is a toy forest of dwarf black spruce. On the other is a mass of hemlock, pine, red maple and alder made bright by the bloom of pinxters, marsh marigolds, mountain holly and pond lilies.

To behold their exquisite haunts is the reward of those who force their way to these weird and sagging shores. Such visitors are welcome; but, oh, may they bring not and leave not their junk—their tin cans, beer bottles and papers which offend the nature we respect.

Beyond the brow of the hill, local history has radically changed the cover of the level uplands. About 20 years ago they were hayfields; 50 years ago they were dairy and potato farms. Now their stone walls are tumbling and their lanes are abandoned.

At the extreme southern end of the property are two triangles. One lies in a rocky, poorly drained area from which the old-growth conifers were removed four decades ago. Defective hardwoods now dominate the stand. The other prong contains a few acres of old-growth spruce now spreading seedlings over the old pasture in competition with soft maple and birch.

The northern unit of the Charlotte Forest begins on the South American road with a fine ten-acre field. It is a long narrow 300-acre piece sloping more evenly and gently up from the valley. Two-thirds is old pasture and one-third a hardwood lot picked over again and again for sawlogs and fuelwood. The saving graces are the abundant white pine seedlings and saplings. The drier, more sunny exposure seems to favor pine and the associate red oak.

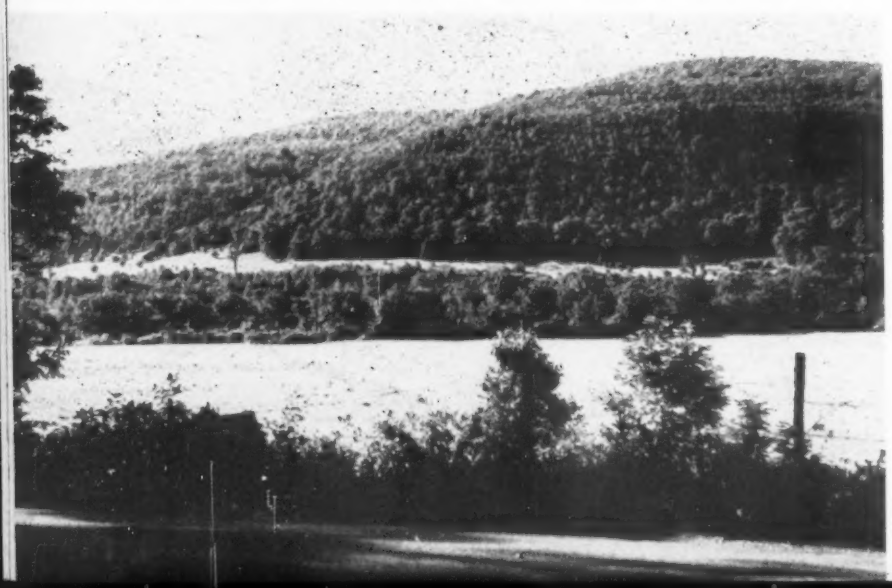
From the point of view of forest management, the property has too much open land (300 acres) and too much timber in pole sizes. But for silvicultural research it is ideal because it contains examples of the spruce-fir, northern hardwoods, and white pine-red oak types in all stages from seedling to old-growth, on all exposures, elevations, and site classes possible in central New York.

The financial and mechanical problems of tree planting have to all intents been solved in New York. Landowners can get advice, subsidies, trees, and planting service that ensure the reforestation of their idle acres with a minimum of cost, risk and effort. Hence this particular activity has gone ahead with dispatch. Indeed it may be receiving excessive precedence over more important but less dramatic activities.

In planting trees I have given pref-

(*Turn to page* 54)

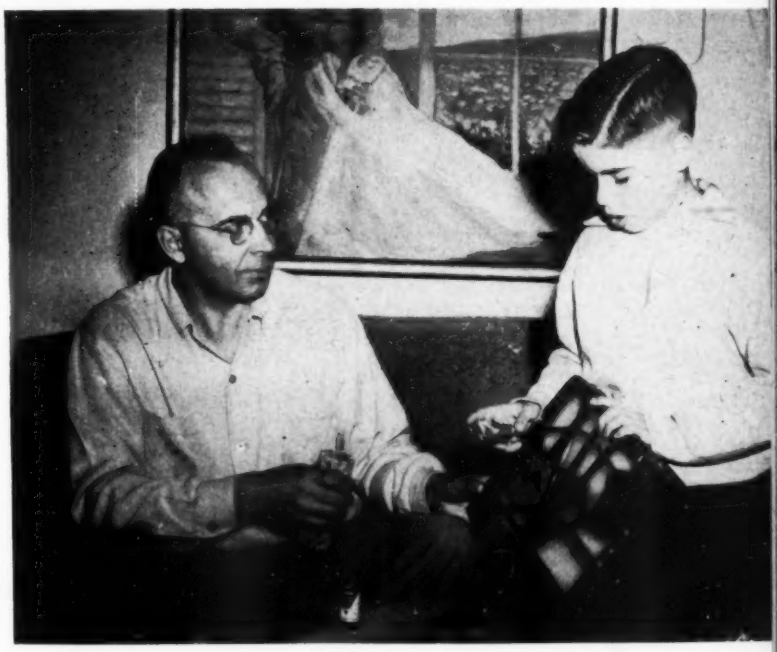
High timber begins where the base of Quaker Hill turns sharply upward



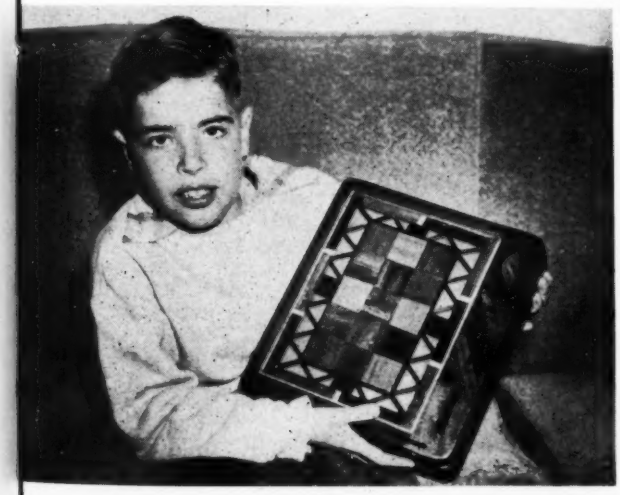
Father and Son Share a Tree Hobby

By HUGH ENOCHS

Satisfying my eight-year-old's curiosity about the warty and bumpy appearance of the pepper trees, relating the intriguing story of the tree houses which natives build in Africa's giant baobab — these bedtime discussions are sample facets of our father and son tree hobby for which there is a never ending supply of material. There are trees to be climbed, the exotic and unusual to be discovered, rare and historic woods to be collected, arrow quivers to be carved from the bark of a majestic birch. The challenge of a yet unknown foliage, fragrance, grain or color provides an enduring fascination in our shared hobby.



Author and son Hugh consider new inlays for hobby book already containing 180 unique woods



Inlays of 46 woods form the back cover of the hobby book. Dominant is the inlaid tree of noted Mexican woods and a central panel of 15 Philippine woods.

The inside front cover has inlays from five continents. Stamps portray famous "traveller's tree."

The "tree pals" realize the importance of first-hand experience, but find this eucalyptus as impossible to climb as California's giant redwoods.

Dow Chemical Photo

Rotting doors like this are an unnecessary eyesore on many buildings

Forest Products Laboratory Photo

Corners of buildings are particularly susceptible near the ground level

Dow Chemical Photo

Not only barn's siding but patchwork repairs will also rot if untreated

Putting the Dollar Sign on Decay

By HENRY B. STEER

You and your neighbor are wasting nearly 200 million dollars annually by using untreated lumber and posts—but you can prevent it

DO YOU realize that you and your rural or urban neighbor are throwing nearly 200 million dollars down the drain every year by repairing and replacing buildings with untreated lumber and by using untreated fence posts? And that you are creating a damaging drain on the nation's forests? Well, you are. But you can avoid it. Take a tip from the railroads and utility companies and get the maximum service from your timber by protecting it from decay.

Enormous quantities of lumber are used annually in the United States for the repair, replacement and alteration of buildings. It is reliably estimated that more than five billion feet are required each year for these purposes on farms and an additional 1.4 billion feet for non-farm buildings, a total of 6.4 billion feet.

Since the amount of lumber in farm buildings and urban residences that is exposed to insect and fungus-caused decay is unquestionably very large, it seems reasonable to assume that nearly half this total, or about three billion feet, is used to replace lumber that has failed because of decay.

The economic significance here is staggering. Lumber used to replace the rotted original represents about ten percent of our total sawtimber drain, or the entire sawtimber stand on 400,000 acres. If an average value of $75 a thousand feet is placed on this lumber it means that decay is responsible for an annual cost of 225 million dollars. And this does not even take into account the cost for labor involved.

Wood preservatives, as the railroads and utilities have proved by use of treated cross ties, poles, and so forth, can drastically reduce this waste. In simple arithmetic here's how. Figuring that treated lumber will last an average of five times as long as untreated—a conservative estimate—the annual cost of lumber for replacements because of decay could be reduced to 45 million dollars—a saving of 180 million dollars! The drain on the forest for this purpose could be pared to 600 million feet, and the sawtimber area cut over each year to 80,000 acres. Or better yet, it would make available two and a half billion feet of lumber for other purposes—enough to build 250,000 new houses every year.

A great deal of timber is also squandered every year through the use of untreated fence posts. To many people the fence post is just something wire is strung on to keep the cows in the pasture. But when you realize that as many as 225 million wood fence posts are produced and used in the United States in a single year they become an important economic and conservation factor. About 12 million of these posts are treated by commercial wood treating plants. If we assume that half this amount, or six million posts, are treated by small non-commercial plants and subtract the total of 18 million treated posts from the total number used we find that about 92 percent, or 207 million are untreated.

From the cost and life expectancy data available, it can be estimated that the saving from using treated posts would average five cents per post a year. At this rate farmers in the United States would pocket a

ten million dollar annual saving if they used only treated posts.

There is also an important conservation aspect to the fence post situation. The average fence post treated by commercial plants in 1948 and 1949 contained .6873 cubic feet. It is probable that these treated posts were larger than their average untreated counterpart. So if it is assumed that the average untreated post contains .5 cubic feet, the content of a post seven feet long with an average diameter of three and a half inches, then the 207 million untreated posts used each year contain about 103 million cubic feet of timber.

Another thing to consider is that the large majority of fence posts are round and are presumably cut from pole timber. (The term "pole timber" as commonly used, means timber too small for sawlogs—timber from five inches and up to sawlog size diameter breast high.) The average stand of pole timber in the United States is 1423 cubic feet an acre. This means that the entire pole timber stand on nearly 73,000 acres is cut every year for untreated fence posts.

If all fence posts were treated, the average annual consumption would be cut to about 40 million, the drain on the forest slashed to about 20 million cubic feet, and the total pole timber area cut over reduced to fewer than 15,000 acres.

It is, however, difficult to sell the use of treated fence posts to farmers who do their own work, consider cash outlays only and omit the cost of their own labor. When posts can be obtained for the cutting, hauled to the fence line, and set in place without an actual expenditure of money, it is quite a job to show that treated posts, which require a definite cash outlay, are actually cheaper in the long run.

There is also an important forest management phase to this problem. To the extent that fence posts are cut in making needed thinnings or improvement cuttings it can be considered good forest management. When, on the other hand, posts are cut from thrifty pole sized trees of desirable species in stands that are not overcrowded it is not good management. The owner of the timber is depleting his stand of fast growing trees which are entering the most productive period of their lives and are just beginning to pay large dividends in the form of annual growth.

The preservative treatment of wood when used in situations favoring decay is not an economy where it is to be in service for a short time only, for in instances of this nature durability is unimportant and the expense of any kind of preservative treatment would be a needless waste of money.

Paint or varnish do not protect wood against decay or insects because they do not contain substances which are poisonous to fungi and insects. When wood of a common nondurable species is to be used in places favorable to decay, it should be impregnated with a chemical poisonous to fungi. It is generally true that a preservative treatment which will prevent or greatly retard decay will usually offer adequate protection against insect attack.

There is not now nor has there been—except in times of national emergency—a shortage of "lumber" or of other common products of the forests such as fence posts. There has been, there is now, and there will increasingly be, acute shortages of grades of lumber of high quality and of durable woods for use as fence posts, poles, piles, railroad ties, construction and other purposes where the wood is subject to decay and insect damage. It is becoming increasingly necessary to use nondurable species for the above purposes. This requires frequent replacements involving much labor and expense or the preservative treatment of these less durable woods to make them last longer.

Before exploring the advantages of using treated wood on farms and in urban residences in situations where it will be exposed to decay, it must be understood that the rate of decay depends on a number of variables, in addition to the aforementioned. Some of these are temperature and humidity, the kind of fungus, and the character of the wood. Decay may progress so rapidly that it destroys the usefulness of a piece of wood in a few months or so slowly that it will scarcely be noticed.

There is, therefore, a tremendous variation in the life of wood of a given species for a specific purpose, not only over the country as a whole but as between states, counties, and on individual farms or other tracts of land. An untreated pine fence post, for example, set in a well

(*Turn to page* 67)

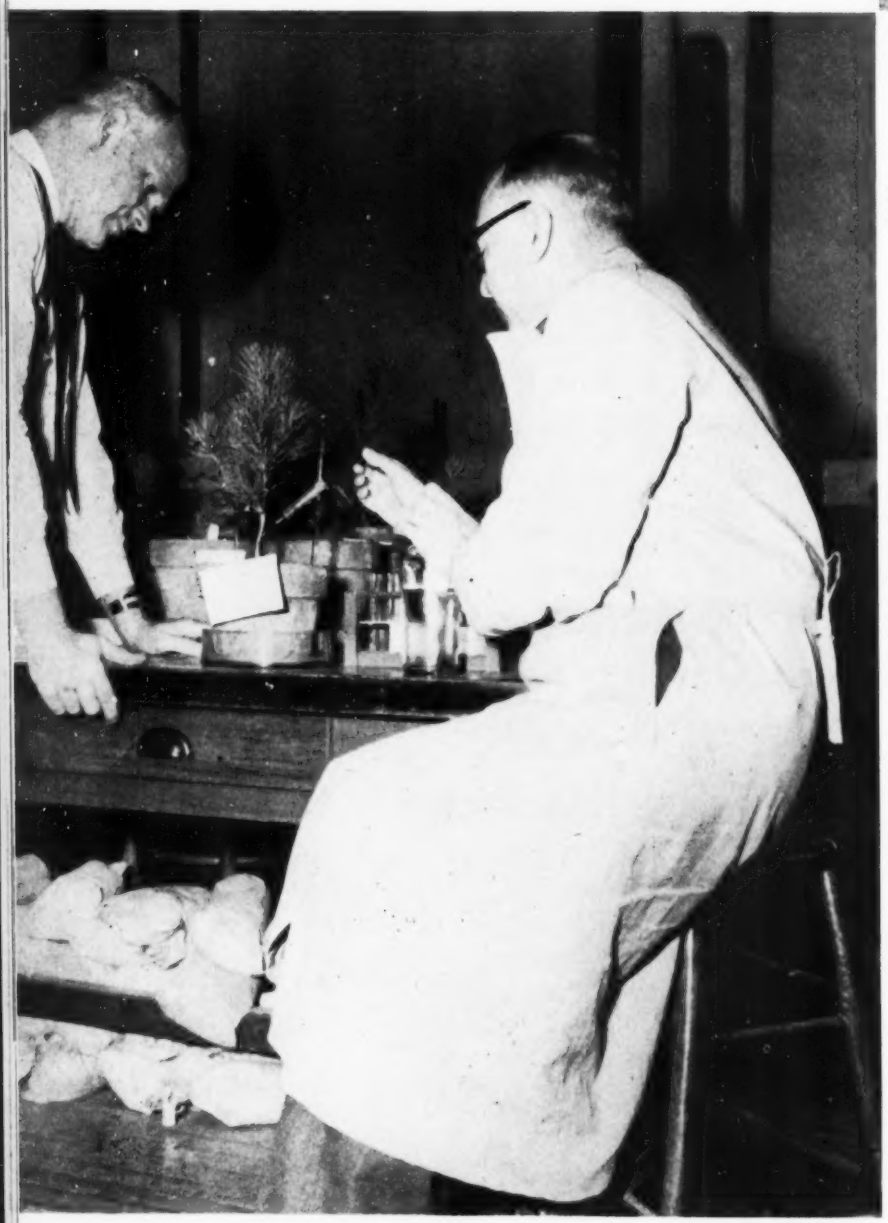
Farmers in the United States would pocket an estimated 10 million dollar saving every year if they set out only treated fence posts

Photo Connecticut Agricultural Experiment Station

IDAHO'S

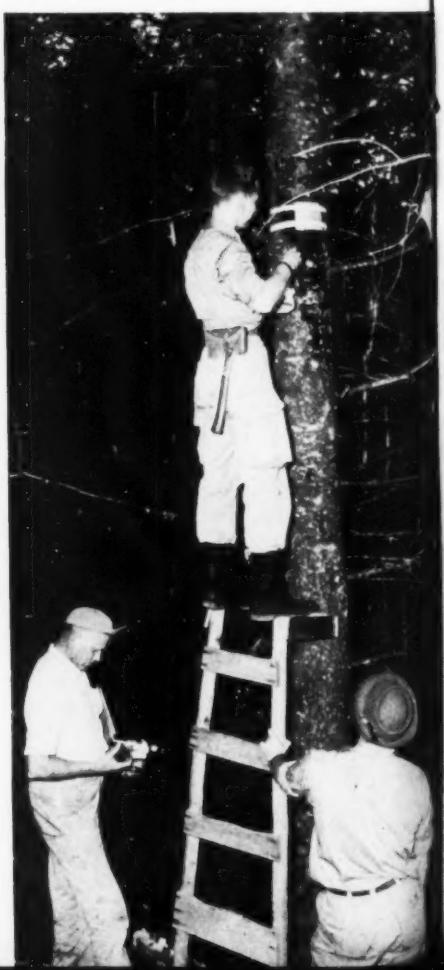
Pole Blight Clinic

Specialists examine a peeled stem for telltale lesions meaning pole blight

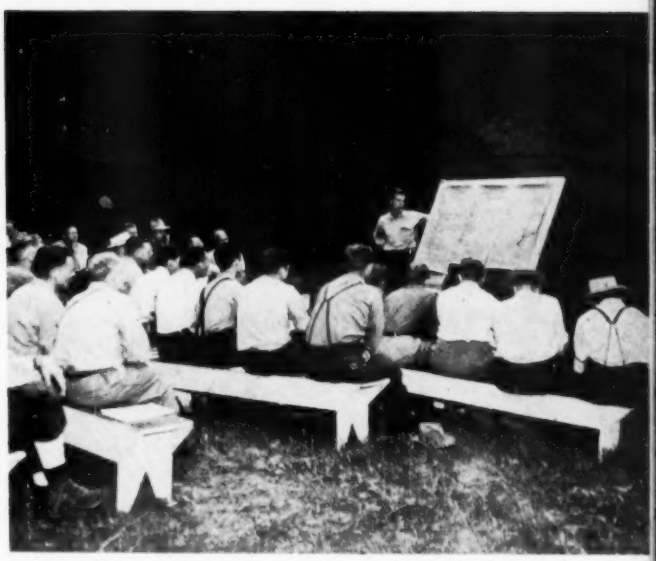


Dr. E. E. Hubert, pathologist, makes a hypodermic injection in potted seedling

Stem inoculation has proved effective way to determine causal fungus



Roots of healthy and diseased trees are compared for clues on whether the blight is transmitted underground



At this first pole blight recognition school, foresters and lumbermen from threatened area got symptom briefing

Using radioactivity and other tools of science, Gem Staters battle a mystery disease periling our supplies of white pine

By O. A. FITZGERALD

IF YOU THINK doctors who treat the aches and pains of human beings are alone in having trouble with their patients, a group of forest-tree doctors in Idaho will set you straight.

Because trees don't discuss their symptoms the way people do, these tree doctors have had to tear some of their patients completely apart, needle by needle, fiber by fiber, to try and find out what's the matter with them.

And now they're shooting radioactive isotopes into those patients.

Tree doctors are tearing trees apart and bringing in some of the newest tools of science in a determined effort to find the answer to forestry's newest billion-dollar puzzle—the mystery disease that threatens the nation's supply of white pine.

From the white pine forests of Idaho, Montana, and Washington—the area threatened by the puzzler—come at least 95 percent of the nation's supply of this prized softwood. Logs cut on Idaho's Clearwater river may, for instance, wind up in a home in Los Angeles, Chicago, or New York. Logs rafted across Idaho's Priest Lake may wind up as old-fashioned stick matches on store shelves anywhere in the world.

In an attempt to protect the nation's main source of white pine, radio isotopes will be traveling up through the trunks of selected trees in Idaho's white pine forests. Already they have been shot into potted seedlings in the laboratory. Food elements those trees pull from the soil will be tagged with radioactives and their progress up through the trunk and branches checked by men who climb them and take readings with Geiger counters.

The disease which strangles individual trees to death and could with equal ease strangle a tremendous white pine industry in the nation's largest and most valuable stands of this tree, has been called "X disease" and "unknown disease." Now it is known as "pole blight" in recognition of its preference for middle-aged trees, those anywhere from 50 to 120 years of age. Foresters call these the "pole size," but to the lumberman they are the sawlogs for the next century.

"Pole blight has everyone in the West's white pine country really worried," declares Dr. T.S. Buchanan, now in Liberia on a United Nations forestry assignment and on leave as head of forest pathology at the University of Idaho, Moscow. Until recently he served as chief of the Idaho pole blight reseach team.

"Millions of dollars are expended annually to protect our fine stands of young white pine from blister rust, fire, and insects. All this could turn out to be just wasted time and money should pole blight wipe out those young stands as fast as they reach the vulnerable middle age."

Already the Idaho research men have placered out complete tree root systems, torn trees apart fiber by fiber, made hundreds of bark grafts, studied all kinds of forest soil, and kept records on more than 3000 sick trees in an attempt to solve the puzzle.

No human being going through a medical clinic ever received a more thorough diagnosis than that being given the sick trees in a five-national-forest clinic. Diagnosticians are the research men from federal and state agencies concerned with the management and general welfare of our forests. That includes, in this case, the U. S. Forest Service, the Northern Rocky Mountain Forest and Range Experiment Station, Division of Forest Pathology, Bureau of Entomology and Plant Quarantine, and the University of Idaho School of Forestry.

"Right now we are sure of but two things," declares Dr. Buchanan. "First, pole blight is a killer. There is no evidence that any tree, once it has acquired the disease, ever recovers. Second, it is a hillside disease, being worse at the middle of a slope than at either the top or bottom."

Because the nation's main source of the valuable softwood is at stake,

(*Turn to page* 38)

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Davy and the Tornadorious Bird

(*From page* 23)

North Pacific Ocean—he was the most pitiable victim of curiosity in all history—in all natural history, at least. The trouble with the thunderbird's curiosity was that it would regularly grip him with the urge to fly backwards to see where it was he had come from. Why didn't he turn around when he wanted to satisfy his curiosity this way? Who can tell? As the Book says, a mighty mystery is the way of an eagle in the sky. And the thunderbird was an earlier bird than the eagle, a bigger one by a mile, and that much more of a mystery. He simply was able to fly backwards right well, and he'd just do it to see where it was he had flown from.

So on that day of late summer around 1820 the thunderbird flew backwards for Chief Sequoyah and Davy Crockett. His tail was a whirl from which forked lightning struck away. His claws were down and the talons glittered as brazen spears. His beak pointed and his eyes glowered backwards between the down claws. Youthsome Davy and Oleman Sequoyah took a look at each other. They needed no words to say that their chances were as poor as Job's turkey.

They stood on a ridge like this one but it was above timberline. There were rocks to throw; but what could any stone slung by man do to fend off a bird that could pack a runt whale in his claws? No hidey holes were in sight. A bullet from Crockett's rifle, Killdevil, would be no more than a bee sting to the monster up there. Big Butcher, his knife, might trim one feather from the thunderbird, but no more. Sequoyah had no weapon. All he packed were books and acorns.

There, Frank Silvertooth, is an Indian of history for you to learn about and look up to. Chief Sequoyah was born to be a scholar. He invented a written alphabet from the speaking tongue of the Cherokees of Tennessee. A Cherokee Bible was printed from it first. Next thing was to make some kind of book from the tales that were told over and over around Cherokee campfires about Davy Crockett.

For youthsome though Davy was, he'd been a hero for years to all the Indians who were good farmers and herders of Tennessee. It was well and favorably known among them that Davy Crockett had stood for the rights of the Indians even before he was old enough to toddle. When he left Tennessee to go west and make the Oregon wilderness safe for settlement, then right soon the bullies and squatters began to rampage for grabbing the land and hooking the livestock of the Cherokees and driving them away west, even as the Israelites had been sold unto Egypt.

Sequoyah had come west alone, by way of California, to fetch Davy home. He brought gifts. They were books. And more, they were another new invention of the born Indian scholar—the almanac. His books were the first almanacs in general and in particular they were the first of the famous Crockett Almanacs. Sequoyah had put the Cherokee Crockett stories into Cherokee print.

Well, sir, *such* tales! If they'd been about anybody beside Davy Crockett the stories would have been well-nigh unbelievable. One said that when Davy first hollered for his Ma the hickories all bent double and the crawdads went down a foot. Davy blushed when he read it. But he reckoned it must have been so.

The books said that as soon as Davy was old enough to sit up and take notice he would crawl forth and sun himself in a thunderstorm. First time his folks took Davy to meeting, the books told, they took him on two horses. First time he toddled out and got lost in the woods the snakes spit blue and red lightning at him, the big bears growled low-bellied thunder, the wolves howled like nor'east hurricanes, and panthers screamed fit to set an edge on the teeth of a mill saw.

The books declared Davy larruped the entire den of varmints till they were pleased to lick his infant hands, and they joined his family circle for life. The books said Davy rode one bear to school while another toted his books.

Such were samples of what the Cherokee books of Chief Sequoyah had to tell about Davy Crockett as a boy in old Tennessee. The further they went in showing how he grew to be the young man of 17 who struck out for Oregon the bigger the stories were, as a matter of course. And there the stories stood in print, betwixt calendars, signs of the zodiac

(*Turn to page* 34)

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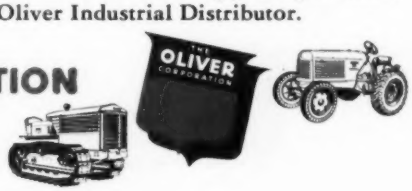

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Davy and the Bird

(*From page* 32)

and weather predictions; all in the almanacs that the great Sequoyah had invented and printed in Cherokee, and then brought all the way to Oregon to show how well young Davy was thought of and wanted back home.

It was the time of the thunderbird when the famous chief found the famous hunter. Davy Crockett was bound to see for himself if there was any truth in all that the Oregon Indians put forth in talk and pictures about the tornadorious monster of the air and its flying in with a whale each year at end of summer and start of fall for a big meal on the mighty mountain. So he had fixed up for the climb. Should he come on whale bones at the top, he said, he would have to admit that nothing less than a thunderbird could have fetched them there. And if any thunderbird was left alive—the Indians themselves saying they surely were becoming a scarce article—Davy could hope to see him. So matters stood when Chief Sequoyah caught up with the famous hunter in old Oregon.

The Cherokee chief was the only Indian who was willing to climb to the haunt of the thunderbird. Now they stood at the summit. Away there on the snows the blackfish critter from the briny deep stood forth like a roasted razorback on a white table cloth. While neglecting his meal on account of his curiosity, here came the thunderbird, flying backwards to see where it was he'd come from, then fixing to light down on the two mites of men on the rocky ridge.

On back he flew, sloping down the wind for the mountain hunters. And then—

Well, now, let me recite to you what happened then as Davy Crockett himself told it years later on the floor of the United States Congress. All that he said was wrote down for the *Globe*, as the record of proceedings in Congress was called at that time. I read it there, I learned it by heart.

"Mr. Speaker," said Davy Crockett from the floor of Congress, "there I stood with the noblest red man of them all, both of us staring stark up at old Death Hug himself, with wings on. That wheel tail of his turned slow as the thunderbird hovered to us. I could count his 14 claws. Each

(*Turn to page* 36)

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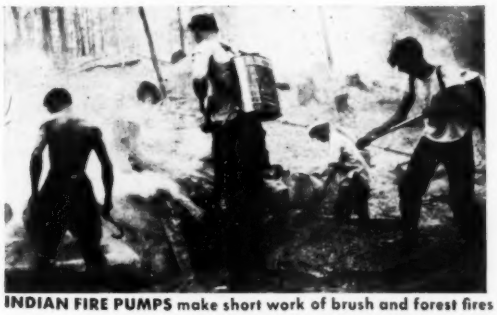

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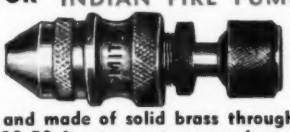

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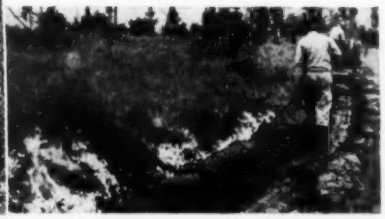

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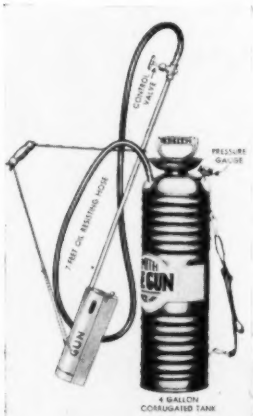

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Davy and the Bird

(*From page* 34)

was fit to hook and hold a bear. He slavered at the beak for a taste of our blood. I waited up to the last second, then I took a leap in front of Chief Sequoyah, and there I stood to take the lightning, like unto Ajax of old—"

That's how I read it in that prized family copy of the *Globe*. At that point Congressman Crockett quit speaking and appeared as one frozen by awful memories, until Speaker Henry Clay was moved to ask, "What happened to the gentleman from Tennessee in that dire predicament, sir?"

"Why, then," said Congressman Crockett, "the thunderbird killed me!"

So that account of his turned out to be only a sell on Henry Clay. There was nothing in Congress that Davy Crockett ever liked to do more than to get a laugh on Henry Clay.

Of course Davy didn't expect anybody to believe anything that was heard from Congress. You know and I know the facts of the matter. Both Sequoyah and Davy got down from the mighty mountain with whole hides and the loss of nary a drop of blood. They went on for many years to make history together.

Now, Frank Silvertooth, here's the item of that history which I've been leading up to. When that tremendous thunderbird of a President of the U.S.A., Old Hickory Andrew Jackson, hooked his talons into the treaties that had been made with Indian tribes from Tennessee to Florida, and ripped them into pieces of paper, the one Congressman who fought him to the finish was Davy Crockett. When Crockett took his stand he knew it would be his finish in politics. The white voters wanted the land of the Cherokees, they wanted Jackson to make the steal. And in the next election Crockett had never a chance. Right soon he headed for Texas and death at the Alamo. He could not bear to stay in Tennessee and watch the people of Sequoyah being torn up and driven forth into the wilderness. . . .

Uncle Ben Cotter stopped his story. He just sat on the log, looking north.

"I can swallow all the things you've told but one," said Frank Silvertooth. "That one is the last. Any account of a white man's giving up all he has to fight and steal from the Indians is

(*Turn to page* 38)

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Davy and the Bird

(*From page* 36)

something to me that hasn't happened and can't happen."

"I don't blame you," said Uncle Ben. "I'd feel the same in your place."

I knew we'd soon be moving. The storm was raining itself out on He Devil. There was no more lightning. Frank Silvertooth stirred around on the log. He kind of grinned from a corner of his mouth at Uncle Ben Cotter. He had softened somewhat, somehow, it was plain to see. Uncle Ben was brightening. I guessed he had what he wanted most. But I was like Henry Clay. I had to ask what *did* happen to the thunderbird and the hunters on the mountain summit.

"Why, sonny," said Uncle Ben. "Davy Crockett had a sudden notion about the tales in the Cherokee books that told of the deeds of Davy Crockett. He spoke of it quickly to Chief Sequoyah. Then they both took the books and threw them into the beak and the gullet of the thunderbird. And, as Davy'd reckoned, the thunderbird could not swallow them—he choked on those Crockett tales—in no time at all the thunderbird plumb choked himself to death!"

Pole Blight

(*From page* 31)

researchers are working double-time. Their task is not easy either, for sick trees aren't as talkative as sick people. A total of 50 trees has been completely dissected, needle by needle, fiber by fiber, to develop a set of measurable symptoms to use in diagnosing sick trees.

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"We want to see if there is any difference between the roots of healthy trees and diseased ones," Buchanan explains.

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(*Turn to page* 40)

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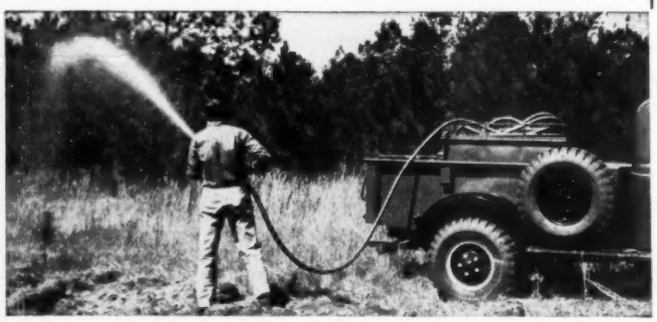

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Pole Blight

(*From page* 38)

from diseased trees have been grafted onto the trunks of healthy ones. Root fungi from sick trees have been transplanted to healthy roots in areas miles from any known outbreaks of the disease. All this is to find out how the disease is spread.

How long does it take the disease to kill a tree?

Researchers don't know, but at 21 experimental plots, each with about 150 marked trees, the answer is being sought. Frequent checks are being made on the health of these 3000 trees. All that's known now is that "something" seems to strangle the tree on the inside and that the tree dies from the top down.

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Not all of the research is out in the forest—not by several hundred test tubes. In his laboratory refrigerator, Dr. Ernest E. Hubert, research forest pathologist, has hundreds of test tubes containing fungus cultures from sick trees. Some will be transferred to healthy ones. Parts of sick trees are brought into the laboratory, burned to ashes and their mineral content measured.

While the white pines are under a blanket of snow during the winter months, research activities shift to potted white pine seedlings in the greenhouse. Solutions prepared from the juices of sick trees and fungus extracts prepared from their roots are tried on these seedlings.

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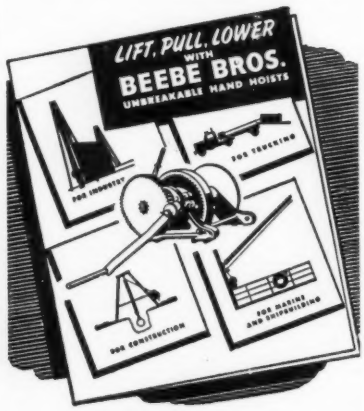

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Wildlife as a Crop

(*From page* 16)

United States is reckoned at more than 33 million persons. And not even the cane-pole fisherman or single-barrel hunter can go into the field without creating some business.

That business spreads throughout the entire commercial segment of the community. Out of each dollar spent, the sportsman puts only 10.5 percent in fishing tackle, about 11 percent into guns, and four percent into ammunition. Three fourths of the sportsman's dollar goes for transportation, meals, lodging, and all the miscellaneous goods and services incident to hunting and fishing activities. Every part of any community benefiting from the outdoorsman's spending has a stake in maintaining the wildlife resources on which this business rests.

It may be easy to kick around the wildlife produced on our forests if its place in planned management is argued from the standpoints of aesthetics, sentiment or emotion. But take a kick at the dollar value of these resources and you bruise your toe on a heap of hard coin.

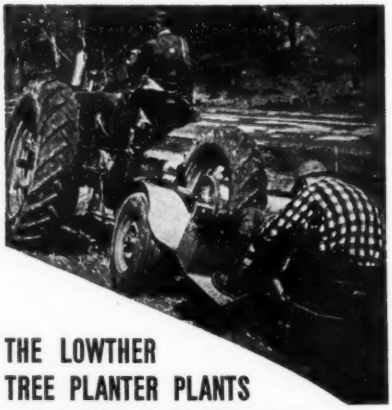
As such a major crop, wildlife deserves far more recognition than it has had. It deserves consideration secondary only to the timber and watershed resources for which the national forests were created.

It's time forest wildlife took its place near the top in appropriations for its management, policies in forest administration and community recognition as a source of considerable annual business.

Birds in Every Bag

(*From page* 19)

tender. Line a baking dish with biscuit dough and make a top crust while the birds are simmering. Remove the birds, and put diced vegetables — potatoes, carrots, celery, onions, canned peas, or what have you—into the broth. Simmer until vegetables are done; then thicken with flour. Place the birds in the crust-lined dish, pour in the stew, add some butter, put on the top crust and bake until the crust is nicely browned. There is a dish to assure you of next year's invitation to the hunt! And equal to the thrill of bagging the birds is the joy of cooking them to perfection and watching the smile of contentment come over the face of the family or friends to whom you serve your savory game dinner.



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Greetings to
The American Forestry Association
and
The Society For The Protection Of
New Hampshire Forests

The National Lumber Manufacturers Association and its affiliated Timber Engineering Company extend their best wishes to you for a very successful joint annual meeting. And our heartiest congratulations go to the Society for the Protection of New Hampshire Forests on its Golden Anniversary.

As the members of your organizations continue their valuable efforts to promote forest conservation, we in the lumber industry shall continue to develop and put into use practical measures for sustained production in our forests throughout the land.

TIMBER ENGINEERING COMPANY
and
NATIONAL LUMBER MANUFACTURERS ASSOCIATION

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THE AMERICAN FORESTRY ASSOCIATION

Presents its Report on

The PROGRESS OF FORESTRY

1945 to 1950

FOREWORD

Across America an exciting drama in forestry conservation has taken place since 1945. To find out what has actually happened, The American Forestry Association has during the past year assembled facts and figures from many sources. These are now available in a report of nearly 100 pages.

The survey was recommended by the Association's Board of Directors to determine the trends of events since World War II and to point out the strong and weak points in the whole forestry conservation movement. It was also designed to trace the developments in line with a 30-point Program for American Forestry previously formulated by the Board and adopted by vote of the membership.

The tremendous task of fact-gathering was carried out by a 12-man committee of government, state and private experts, headed by Ovid Butler, the Association's retired executive director. It represents the work of scores of individuals, federal and state agencies and private organizations, all of whom contributed their time and services to bring under one cover, a documented record of forestry progress in one of the most critical periods in the forestry conservation movement in the United States.

The following pages present the highlights of the more detailed report now available from the AFA at a nominal charge of three dollars.

DOWN in Georgia, two sweating, grimy-faced workers closed the switch silencing the roar of their "cat", stepped from their tree planting machine, and looked admiringly down the long rows of glistening needled pine seedlings that arched over the landscape of their sandy hill farm. They had just planted Georgia's 113,000th acre to a new crop of trees.

In New Hampshire, Governor Sherman Adams put his signature on a revolutionary new law designed to encourage timberland owners to start better forestry methods. In Oregon a fleet of swift planes spread clouds of bug-killing chemicals over dense, pest-ridden forests.

In Wisconsin, a group of forest products research chemists and industrialists sat down to a breakfast of hot cakes topped with molasses made from wood yeast. In Washington, D. C., a congressional committee put the finishing touches on a brand new act designed to start knocking the props out from under the forests' "fifth column"—insects and disease.

Across the nation dramas like these and many others marked the increasing tempo of forest conservation activity set in motion during the past five years. Compared to the past, the 1945-50 efforts were patterned to fit Paul Bunyan's shoes.

Education's Upsurge

The stepping stones by which forestry has advanced to its present position of recognition and accomplishment have been due largely to the educational efforts of many public-spirited citizens, groups and organizations. An objective review of the past five years leaves little doubt that at no other time in the history of American conservation has there been such an upsurge of educational activities.

Some will attribute it to the pent-up energies released after the close of World War II; some to the changing economic picture with higher stumpage prices making forestry conservation an increasingly profitable enterprise; some to basic needs of meeting the challenge of stumpage shortages; some to the threat of federal control on timber cutting. Probably all these factors, plus the growing public acceptance of forestry conservation needs, had their part in the great educational drama.

Particularly noteworthy has been the aroused action of private organizations on national, state and local levels, the extension of organizational activities into new fields, the creation of new groups and the trend away from generalized information to vocational and demonstration methods of reaching forest landowners and the public. Worthy of special mention is industry's contribution to these programs. Likewise commendable are greater educational efforts among youth groups; extension of forestry and conservation teaching in schools and the growth of teachers' "conservation workshops"; and the expansion of information and educational services by public agencies.

Financial Supports Gain

Financial supports for forestry steadily gained strength during the five-year period. The 1949 expenditures of government, state and private operators reached a total of an estimated 150 million dollars as contrasted to about 65 million dollars in 1944.

Federal forestry outlays of 85 million dollars in 1949 were almost double those of 1944, with 78.6 million dollars allocated to the Department of Agriculture, 5.7 million dollars to the Department of Interior and 700 thousand dollars to the Tennessee Valley Authority. Total government expenditures in 1949 fell into the following categories: research, 6.6 million dollars; cooperation with states and landowners in fire protection, tree planting and woodland management, 14 million dollars; operation of government lands, including national forests, parks, public domain, Indian lands, etc., 56.9 million dollars; flood control, six million dollars; subsidy payments, 800 thousand dollars and general administration, one million dollars.

In 1949 receipts from timber and other sales on government lands amounted to 41.5 million dollars, not quite double 1944's income.

Data from 30 states indicate a striking threefold increase in state outlays since 1944 with the 1949 total at approximately 31 million dollars. Annual forestry budgets of more than one million dollars were reported for 1949 by seven states, with another slightly below that level. California's 9.3 million dollars topped all states, with New York second at 3.8 million dollars. About two-thirds of the monies appropriated in the states goes to forest fire protection.

Initial reports indicate private expenditures of an estimated 100 million dollars over the five-year period,

including the funds of industries, private organizations and individual owners, exceeded in point of percentage increase those of federal and state governments. Further, the increase in private expenditures was the greatest of any comparable period in American forestry.

Protection Extended to New Areas

The system, unprecedented in any other nation in the world, of federal, state and local governments cooperating with industries and landowners to provide fire protection for America's private forests brought under its protective fold an additional 56 million acres in the five-year period. Protection is now in effect on 87 percent of the nation's 624 million acres of woodlands—an area that covers one-third of the United States. Of the 82 million acres still needing protection, 72 percent is in the South.

In no other five-year period has protection enjoyed such an upswing. Expenditures from all sources increased 71 percent from 25.1 million dollars in 1945 to 42.9 million dollars in 1949. With more funds and better equipment, forest protection forces have been able to record a decrease in forest fires of 16,000 per year from the previous five-year period. In the period of the report, total number of fires averaged 173 thousand yearly. The area burned, on the same comparison, was reduced eight million acres yearly, averaging during the period 18.7 million acres. Damage of 38 million dollars a year was the same as the 1940-45 period, probably as a result of increased timber values. Almost three-fourths of the loss occurred on unprotected lands. About one of every seven acres of unprotected forest land burned as compared to one of every 200 acres of protected forests.

Despite the general reduction in man-caused fires, an eight percent increase was noted in those of incendiary origin. Incendiaries accounted for 30 percent of all 1949 fires. That same year an all-time high of 6900 fire law prosecutions was recorded in the nation with convictions in 95 percent of the cases. It appears that even greater attention of fire administrators must be directed toward this alarming situation.

Damage from Insects-Disease Grows

Forest destruction by bugs and blights, though less spectacular than fire, now makes heavier drains on timber supplies. Estimates place the loss from pests at 1019 million cubic feet yearly, approximately three and a half times the loss from fire—or something like 133 million dollars. Total expenditures for insect and disease work increased only three million dollars in the five-year period to 7.9 million dollars. Of this, 75 percent was government appropriated. Slightly less than one million dollars is now spent on federal insect and disease research.

Among the states, California, New York, Pennsylvania, Maine, Wisconsin and Oregon stand out as exceptions to generally weak approaches to the problem.

One of the bright points in this picture was enact-

ment in 1947 of the Forest Pest Control Act, largely for cooperative control of forest insects and diseases. Its first appropriation of approximately 1.27 million dollars was made available in 1949.

Forest Surveys Continued

Surveys by all agencies to determine the volumes and growth of the nation's far-flung timberlands covered more than 196 million acres in the five-year period, at a cost of almost 5.4 million dollars.

Conducted largely by the Forest Service, surveys were made for the first time on 95 million acres. Another 89 million acres were resurveyed. Ten million acres of national forests were surveyed. Other federal agencies made surveys of about 600 thousand acres. Ten states reported independent surveys covering 1.6 million acres.

In 1944, the American Forestry Association initiated an independent fact-finding survey of the forests and forest lands of the country. It was financed through contributions aggregating more than 225 thousand dollars. Both the AFA and the Forest Service subsequently collaborated by exchanging survey information where feasible. Final estimates of two groups differed by only about one percent each for total areas and sawtimber volumes.

Increased use of aerial photographs and photo interpretation techniques was noted.

Land Taxation Improvements

At the beginning of the five-year period covered in this report, there were 33 special forest property tax laws among the statutes of 26 states. These laws, in widely varied pattern, provided for exemption of timber and timber growing lands from ad valorem taxes, or for yield taxes, bounties, rebates, or fixed assessments. At the close of 1949 the pertinent laws of 19 of these 26 states were unchanged, minor amendments had been made in five states, one had repealed its earlier legislation, and new yield tax laws had been adopted in New Hampshire and Missouri.

Severance taxes, designed solely to produce revenue and imposed upon the privilege of harvesting forest products, in addition to all forest property taxes, were in effect in three states, Arkansas, Louisiana and New Mexico, in 1944. The Louisiana law was amended in 1948 to increase the severance tax rates and to allocate all revenues from this source to the State Forestry Commission. Alabama, Oregon and West Virginia enacted new severance tax laws during the report period, and each of these laws provides for allocation of all revenues, less costs of administration, to state forestry programs. Revenues in Arkansas and New Mexico continue to go to the state's general funds.

Interest in timber severance taxes as a source of revenue for state forestry activities is increasing. Legislation to this end has been introduced in the legislatures of at least five states and is under discussion in numerous others.

Timberland assessment is receiving constructive attention in several states, and while little more than a good start in this field can now be reported, the trend toward assessment patterns which would encourage better forestry practice is promising.

No important changes occurred during the report period in either federal or state income, estate and inheritance tax laws or administration as related to forestry. Requirements for early payment of estate and inheritance taxes will tend in some instances toward undue haste in timber harvesting and thus discourage sound forestry practice.

Little or no definite progress can be reported in the field of forest credit. There is evidence, however, of increasing interest on the part of commercial banks and bankers, and a general impression that the volume of forestry loans by commercial institutions increased steadily over the report period.

Progress in development of sound forest insurance systems is still negligible.

Wood Research Increased

Substantial increases in research, both in the amount of funds and number of projects, occurred in the period. Overall expenditures jumped from 5.7 million dollars in 1940 to 16.9 million dollars in 1949, with about 30 percent of the latter federal monies and the balance primarily private. While no complete analysis of funds was available, about one fourth of the federal proportion was allocated to forest products research and the balance to general forestry, range, watershed and fire research.

In the field of wood research, one survey indicated that 12,500 projects were under way or currently being completed. More than 1600 organizations were undertaking this work, divided between colleges, federal and state agencies, industries, processors, suppliers, commercial laboratories and professional societies and trade associations. Almost half of the wood research is being directed at chemical utilization and most of this in pulp and paper and related products. An increasing tendency to delve into the problem of waste utilization is noted. In pulp and paper, one of the outstanding developments has been the semi-chemical processing of wood pulp, now being widely adopted by industry. Some of the basic research on wood yeasts is moving from the laboratory stage to pilot plant and industrial processes. Utilization of lignin, wood's mysterious cell binder, still continued to offer one of the great challenges to the wood chemist, however, and probably even more to the engineer and economist. While many possibilities have already been uncovered in the laboratories, development of low cost processing techniques to the point where remunerative competitive markets can be cracked, are in many instances the determining factors blocking the extended use of wood by-products.

Some of the outstanding forestry research of the period has been the intensified developments of chemicals for killing weed trees and in nurseries to kill weeds—in both cases a boon to land managers because of their low cost. Much has been done in testing and developing many lines of equipment for forestry use. Tests of direct seeding of denuded forest areas from the air and aerial dusting in the fight against insects and disease are receiving added attention. Aerial bombing of forest fires, and seeding clouds to prevent lightning fires were also on research agendas.

A continuing need is noted for more coordination among research groups, application of much more of our forest research findings, and for much more basic, fundamental research in the field of genetics, tree growth, environment and cellular development. The basic research in forest insects and disease is pitifully inadequate. Admittedly, research is a long-time haul, but our basic quest for knowledge and a better way of living fully warrants a stepped-up tempo in many phases of our research field.

Land Management Tempo Stepped Up

Ownership and management of forest lands for the growing of continuous crops of wood and fiber products reached a new level of economic acceptance during the half decade of 1945-49. This brought into dramatic play the application of forestry principles throughout the country to an extent unsurpassed in any other era of American forestry. These two facts are abundantly evidenced by:

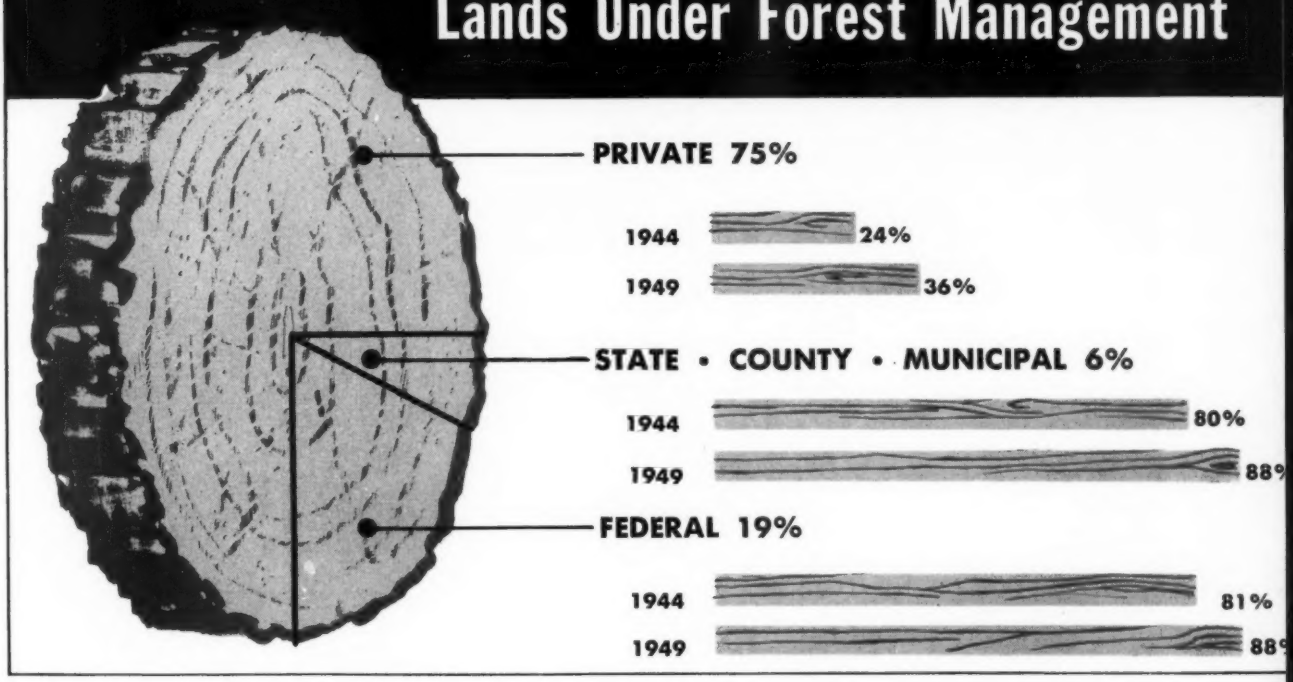
1.) The awakened realization by forest owners, large and small, of the present and future worth of timber-producing lands.

2.) The records of public and private financial outlays in furtherance of better protection and management of forest properties.

3.) The five-year increase in the acreage of forest land brought under management for long-term timber growing.

4.) The acquisition of forest growing lands by industry and individuals with its corollary of sharply rising land and stumpage values.

5.) The widespread acceptance and application of forestry principles and knowledge relating to the growing of American forests and the accelerated development of technological research in the harvesting and utilization of timber crops.



The primary stimulus of these dynamic trends undoubtedly has been the higher value of wood products ushered in by the war and the increasing demands for wood in the form of lumber and other convertible products. The combination of these factors, against a background of long-sustained research and public education, gave forest land management an impetus unequalled in any other period of America's forest economy.

By the end of 1949, about 14 percent of all federal forests lands was under intensive management as compared to an estimated eight percent in 1945. Acreage in cooperative sustained yield units has increased about 15 percent to about 31 million acres. An important feature of the federal land program during the period has been extension of access roads into remote forest areas. About 65 million dollars were spent during the period for construction of 1138 miles of new roads and for maintenance.

State, county and municipal areas showed a six percent increase in intensive forest management and a seven percent reduction in the areas without management. The period was noted for the rapid increase in community and county owned forests—an increase of nearly 1.6 million acres in the five years. By 1950 there were 3200 such units embracing 4.6 million acres.

Private lands, about three-fourths of all the nation's forests, under intensive management increased from four to nine percent, and under extensive management from 20 to 27 percent. Still of concern is the 53 percent of private land without management, a reduction, however, of 11 percent from 1944.

Greater expenditures by industries are evident where the greatest strides in private forest land management were made. One survey showed industrial expenditures for forestry averaging 48 cents an acre in 1949 as contrasted to 24 cents in 1944. In the South, expenditures have jumped on an average from 11.5 cents to 41 cents an acre. In the California redwood section, industries were spending $1.07 an acre as compared to 51 cents in 1944. Southern paper companies estimate that 71 percent of their pulpwood is being cut under practices that provide future crops. Another healthy sign of industrial development has been the 60 percent increase in expenditures for forest land acquisition. A study among a group of pulp companies showed a 33 percent expansion in their holdings since 1945.

Small Woodland Problem Hit Hard

Admittedly one of the toughest, knottiest problems still confronting forestry administrators, the job of selling better forest management to farmers and other small landowners, became a stepped-up government-state-private campaign after World War II.

Federal and state foresters, under the Norris-Doxey Cooperative Act, serviced seven million acres of woodlands in the five years for some 66 thousand owners. Extension Service foresters were doing work with farmers in 23 thousand communities by 1950, and reported assistance to more than 100,000 farmers in 1949. Farm planners of the Soil Conservation Service developed woodland plans on 17 million acres in the five years, more than a 200 percent increase since 1944.

In addition to the public forestry cooperative service work, the Production and Marketing Administration reported subsidy payments to farmers for tree planting, timber stand improvement and firebreak construction amounting to 2.6 million dollars during 1945-50. PMA in the same period paid naval stores operators in the South an additional 2.4 million dollars.

Private consulting forestry business showed a remarkable increase with 351 firms listed by 1950, as compared to 27 in 1945.

The small woodland problem was tackled by countless private, national, state and local organizations, many with industrial backing. Industries themselves were in the picture in a big way. Twenty-four southern paper companies by 1950 were making the services of 40 foresters available to small landowners. Several cooperatives reported increased activity. A New England Forestry Foundation was created with private funds in 1944 to give forestry service at cost. By 1950 it had ten foresters servicing 125 thousand acres of woodland.

One Million Acres Planted

The tree planting boom in the last five years has been amazing. Nursery production increased 278 percent. The number of nurseries operated by federal and state agencies and private companies increased from 59 to 119—the bulk of which were state-owned. By 1950, the nurseries were turning out about one-third of a billion seedlings a year.

Area planted to trees increased 165 percent, from 135 thousand acres in 1945 to 357 thousand acres in 1949, a total of 1.1 million acres for the period. Despite the increase, the area planted appears to be accomplishing only one-eighth the results of The American Forestry Association's earlier recommendations of 20 million acres by 1957. Nevertheless, the tree planting boom is putting many idle acres back to work. Mechanical tree planters, with an estimated 600 in use by 1950, have greatly speeded planting.

Of the area planted during the last five years, 57 percent has been on land of farmers, 22 percent public owned and 21 percent industrial. Approximately half of all the lands planted to trees lies in the South, with Georgia top state for the entire nation, reporting 113 thousand acres reforested during the last five years. Michigan, South Carolina, Florida, Wisconsin, New York and Louisiana followed in that order.

More States Add Cutting Controls

Without relinquishing the educational efforts to achieve voluntary action by private owners of forest properties, the decade 1940-49 demonstrated a significant trend toward statutory control of forest production on private lands. Efforts to secure this control by means of federal legislation received small support. Of the six states which enacted controls since 1945, only Washington chose to combine the power to define and enforce cutting practices with the State Board of Forestry. California, Vermont and New York delegated responsibility for determining acceptable practices to state or local advisory boards. New York steered entirely clear of any delegation of mandatory powers for enforcement of its practices. Missouri and New Hampshire have avoided direct controls in favor of tax adjustments as inducements for the acceptance of good cutting practices.

Summed up, the state picture on timber controls by 1950 showed laws of this nature in 16 states, only

12 of which gave promise of effective administration. Laws passed by Nevada (1903), Louisiana (1922), Idaho (1937), and New Mexico (1939), were not being enforced.

It is significant to note that the 12 states now providing the soundest legislation on cutting practices present an aggregate forest area equivalent to one-third of the commercial timberland in the United States. Their board foot timber volume, however, accounts for almost three-fourths of all the country's merchantable timber.

Recreational Use of Forests Boosted

With the end of World War II, the lifting of restrictions on travel, the reunion of families again, the return to shorter work periods, longer vacations and production of automobiles, the American public flocked to the recreational areas of the nation's parks and forests as never before in history. In 1949, somewhat more than 170 million visits were made to these areas. Hunting and fishing increased, as indicated by the rise in licenses reported purchased for these activities in the states from 16.4 million in 1945 to 28.2 million in 1949. Forests provided the setting in many cases for this tremendous activity.

Principal additions to federal recreational areas were the creation of the Everglades National Park in Florida and the Theodore Roosevelt National Memorial Park in North Dakota.

Park administrators across the country were finding increased problems in maintenance or improvement of existing facilities because of inadequate budgets. Some studies were under way in national forests to determine the feasibility of meeting higher costs by charging for the use of recreational areas.

Big game populations, after increasing at a rapid rate for many years, showed signs of leveling off by 1950.

Forestry Becomes Mechanized

Undoubtedly the new technical advances in equipment have done much to speed up forestry conservation work in the past five years.

The increased use of airplanes has been noted. There were 37 planes reported in use in the states for forest fire work in 1949 as compared to four in 1945. More tanker trucks, tractors, bulldozers, plows, power saws, water pumpers, were reported. Radio equipment almost trebled. Helicopters were being tested. Aerial photographic techniques fresh from World War II were being applied increasingly for many types of forest survey work.

Nursery work is becoming tremendously mechanized as seedling production figures soar to hundreds of millions of trees. Use of tree planting machines rose from about two dozen in 1945 to more than 600 in 1949.

Many Legislative Gaps Filled

Expediting the period's conservation activities was the enactment of many legislative items—some new acts—others revisions of existing laws.

On the national level, perhaps most notable were the following:

The Forest Pest Control Act of 1947, providing for cooperation with states and industries to eradicate insects and diseases.

Upping the authorization of the Clarke-McNary Act for cooperative fire protection from 9 million dollars to 20 million dollars; for cooperative nursery work from 100 thousand dollars to 2.5 million dollars; for cooperative education work through the Extension Service from 100 thousand dollars to 500 thousand dollars.

The McSweeney-McNary Act was amended to provide increased authorization for forest survey work.

The Research and Marketing Act of 1946 provided opportunities for both state and federal forest research, but its total contributions have not been large.

The Cooperative Forest Management Act was passed by the 81st Congress, to become effective in 1951. It replaces the Norris-Doxey Act which was repealed. It authorized 2.5 million dollars for service assistance in forest management through the state foresters.

In 1947, Congress authorized establishment of the Northeastern Inter-state Forest Fire Protection Compact.

The Anderson-Mansfield Act of 1949 provides authorization for more rapid reforestation of national forests.

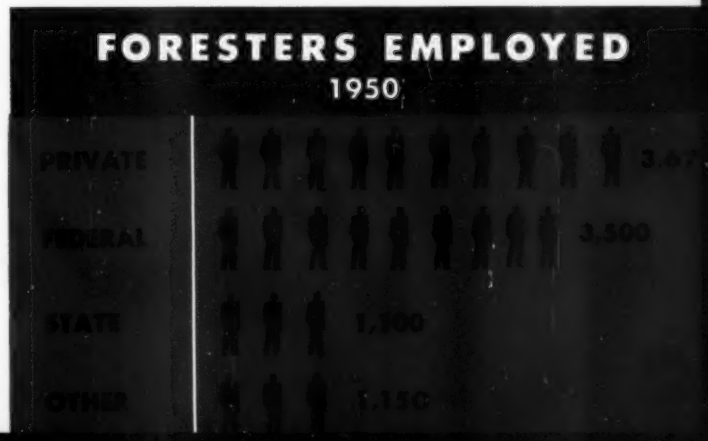
The Materials Act of 1947 authorizes for the first time sale of green timber from unreserved public domain.

Numerous laws were enacted in the states covering many phases of forestry.

More Foresters Trained

The job of turning out professionally trained foresters blossomed into a major operation following the war. By 1950, enrollment in schools of forestry at 34 colleges and universities stood at 8000, a 1200 percent increase over 1944. Eight additional schools were turning out foresters. Faculties doubled to nearly 400 instructors. School appropriations went from 1.1 million dollars in 1944 to 3.6 million dollars in 1949, averaging by 1950 about 140 thousand dollars per school.

In 1950, the Society of American Foresters estimated that there were about ten thousand foresters employed. State forestry departments reported a gain of about 125 percent in professional foresters to 1087



in 1949. Private forestry employment has almost doubled in the last decade. Industrial forestry employment made the most significant gains in the last five years, and on some acres a greater concentration of foresters is noted than on public forest properties.

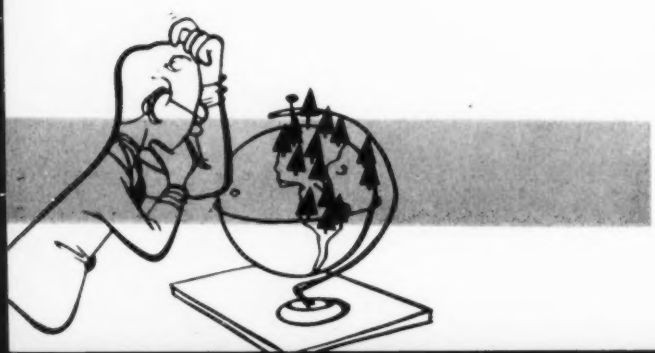
A Look Ahead

Despite the tremendous activity and improvements since 1945, the forest conservation armor still has some chinks in it. Some are old and rusty. Others have just recently shown up. The following are a few of the weak points apparent from a comparison of AFA's Progress Committee report with the Association's earlier Program for American Forestry. The committee itself did not make a detailed analysis of recommendations. That was beyond its scope.

The mounting destruction to timber from insects and disease needs to be faced squarely. Most of the control work is started after "the horse has been stolen." Research, much of it basic, fundamental digging, is pitifully inadequate. More trained insect and disease technicians are needed. Admittedly, a lot of costly control can be avoided with better forest management. The U. S. Treasury and American citizens are losing millions of dollars from pest-killed timber in the national forests alone because access roads are not being extended fast enough into remote, mountainous forest stands where the pests blissfully wreak their havoc on tremendous volumes of old growth timber.

Forest fire protection forces are faced with three major problems: extending protection to 81 million acres; finding a solution to man-caused fires, particularly that one-third attributed to incendiary origin; stretching the dollar to do a better job. The priority value of forest land in many areas appears to justify a much firmer stand on the part of law enforcement officers, public officials and juries in handling the "forest fire bug." It is time many more communities awakened to the fact that their outlying forest areas are too valuable economically and tax-wise to be dissipated by a laissez-faire attitude toward promiscuous woods fires.

How to overcome the deficit cutting of timber on many acres of private woodlands will probably continue for years to be the knottiest problem facing forest administrators. The problem is one more definitely narrowing down to the farmer who owns about one-third of the commercial forest lands in the nation. The variable nature of tree growth, local markets, other economic factors, and the tremendous number of landowners to reach add to the headaches. The picture is further confused by the many agencies providing woodland owner assistance.



It appears that no single or easy solution will be found. Certain suggestions may merit further consideration in seeking some cures to the dilemma. Included are:

1.) A more harmonious, closer working relationship between government, the states, industries and private owners.

2.) A more efficient pattern of government-to-state-to-private owner approach.

3.) More attention to selling the economics of good forestry. Too much of the approach appears to be based on selling forestry by generalities and appeal, rather than sound, practical business sense. The trend in the last few years has been in this direction, but it needs to be intensified.

4.) Development of practical timber cutting guides for landowners for each forest type or condition in the country, followed as the need arises within each state of soundly conceived cutting controls, designed by people within the states.

5.) Expansion of diversified local wood markets.

6.) Adequate systems of roads to make private timberlands accessible to wood markets.

Still to be determined are the desirable ratios of federal-state-private forest land ownership. This problem received little attention during the last five years. Four states — California, Indiana, North Dakota, and South Carolina — have initiated special studies to determine a solution.

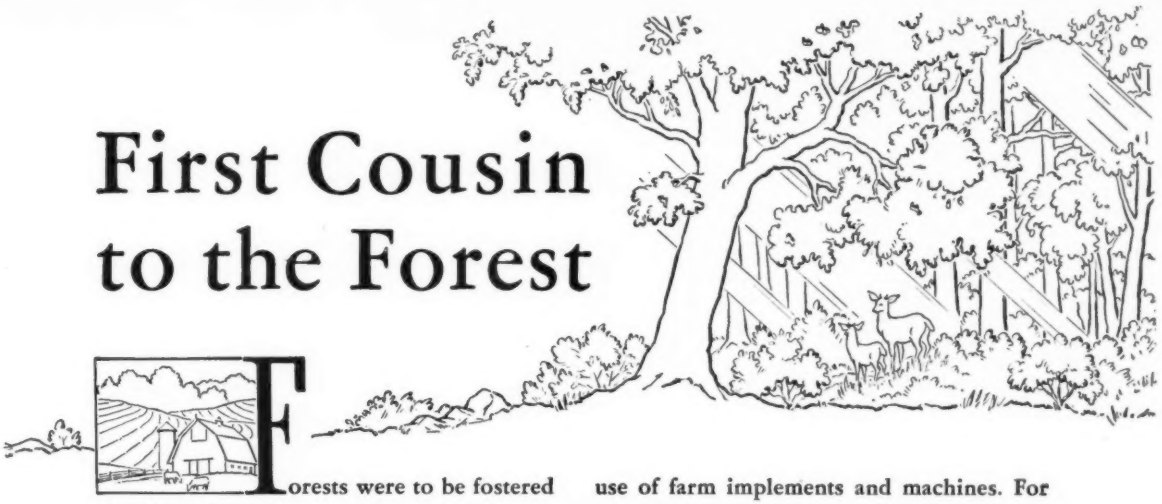
The problems of low cost, long-term credits, more common sense timberland tax laws and assessing techniques, and revisions in federal income tax rulings for forest land enterprises and underwriting of forest insurance still generally remain about as unsolved as in 1945.

In the broad educational field, there is appearing a more pressing need for coordination among various private and public groups to avoid duplication and needless expenditures of money. Many educational programs need to be turned from generalities and pure ballyhoo to more clearly defined action and service programs.

The rising costs of forestry are going to call for greater efficiencies all along the line. There appears to be an urgent necessity for a reappraisal of public expenditures in order to meet the constantly changing pattern of priority conservation demands. Who has delved into the subsidy payments for forestry to determine what the forest owner is getting for his tax dollar? Is there a point of diminishing returns on forest fire protection expenditures? How much is forestry conservation worth?

Finally, a more positive and objective view to the future appears essential. Because of the generally long-time nature of tree growth, all the momentous activities of the past five years will take time to show up in the increased timber stumpage ledger. But surely the hundreds of millions of acres of green forest land that did not burn, the millions of new tree seedlings planted by nature and man on formerly idle acres, the improved timber cutting techniques, expanding wood uses, are strong arguments for a brighter future.

First Cousin to the Forest



Forests were to be fostered for their own sake, as sources of timber, in the dawning idea of conservation. Soon came consciousness of the forest role in control and conservation of water. Later was learned the power of trees in the toughest tasks of soil erosion and silt control.

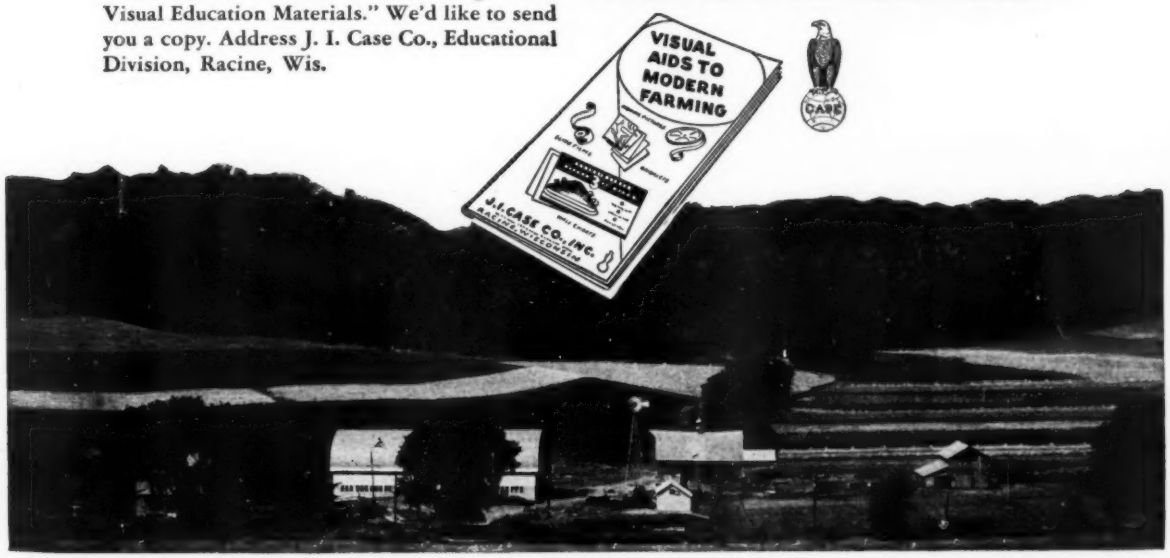
Now we see that conservation comes not in closed compartments, but as a unified program of land utilization. Valley and hill, forest and field, wild life and farm livestock —all are parts of the intricate, interlocking pattern.

Farming methods play the dominant role in the agricultural aspects of conservation. Adoption and success of proper farming methods depend on availability and proper use of farm implements and machines. For more than a century, providing ever-better farm machinery has been the business of the J. I. Case Co. And increasingly, for many years, Case has carried on educational work to inspire farming methods that conserve soil and water as well as human time and toil.

As materiel for conservation methods, farm machinery is kin to the forest. As a contribution to closer kinship between leaders in forestry and agriculture, Case invites you to see . . . and to use, as you can . . . the Case educational materials. They cover all the accepted soil and water conservation practices from ponds to pastures . . . grassland farming and forage feeds . . . improvement of farm fertility and farm earnings.

There are movies in full color and sound . . . bulletin-style booklets . . . wall hangers and charts. All are listed in a little catalog, "Case Visual Education Materials." We'd like to send you a copy. Address J. I. Case Co., Educational Division, Racine, Wis.

CASE



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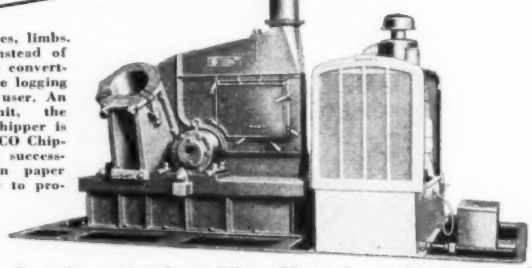

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From

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(Annual production of newsprint 130,000 tons. The first mill to make newsprint from Southern Pine.)

His Wooded Acres

(*From page* 26)

erence to land within obvious seeding distance of weed trees. Their low-grade progeny must not preempt by default. Red pine is favored because, spaced wide apart, it grows rapidly and breaks down, by shading, the heavy sods which prevent the seeding of high-value hardwoods.

The trees are set by three-man crews. Two men plant with mattocks and one man walks between passing out the seedlings. This simple reorganization of the more usual two-man crew raises the expectable daily quota from 800 to 1333 trees. With two helpers I have planted as many as 4000 trees a day for weeks on end.

The pole stands have presented a most difficult and hitherto unsolved problem. The reasons lie partly in the nature of the northern hardwoods and partly in the lack of markets open to small tree products.

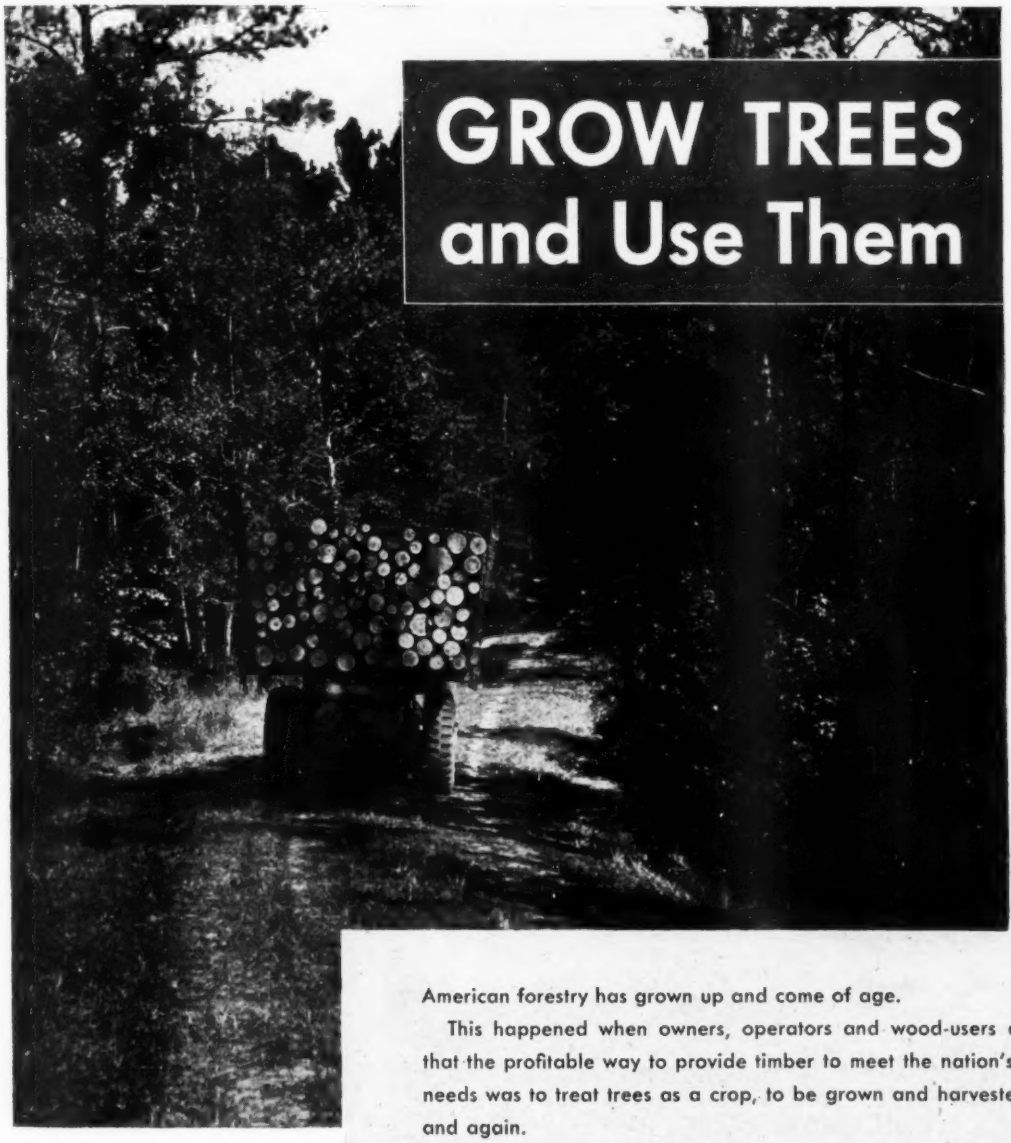
Now some forest types, such as spruce-fir in Canada, produce an acceptable crop without care beyond protection. Northern hardwoods do not. In the course of their development they inevitably produce quantities of defective stems whose removal is of benefit to the crop trees. If they cannot be removed, they must be girdled, poisoned, or chopped down.

I have done some girdling in the finest maple stands but have found it tedious, slow, and unsatisfactory. Perhaps poisoning would speed it up enough to make it practical for a lone worker.

Harvesting trees of less than sawlog size remains a possibility but not an actuality. To the south, in Pennsylvania, are coal mines which use mine props. Operators have agreed to buy them and truckers to haul them; but I have never found a cutter even faintly interested in producing them.

To the north is a large papermill whose pulpwood needs, and those of its 32 competitors, are apparently met without reaching 80 miles to Delaware County. The reasons why my district produces no pulpwood are not clear to me, even though I have talked the problem over at length with foresters, paper men, and pulpwood specialists. I have seen spruce in Montana being loaded for Wisconsin mills and spruce in Quebec being

(*Turn to page* 56)



GROW TREES and Use Them

American forestry has grown up and come of age.

This happened when owners, operators and wood-users discovered that the profitable way to provide timber to meet the nation's mounting needs was to treat trees as a crop, to be grown and harvested — again and again.

Today throughout the nation *repeated* crops of trees are being grown, year after year, on the same piece of land. That's self-supporting forestry and it is good, sound and practical.

This new forestry concept is the foundation for a profitable, long-range business for timber owners and producers, it insures a steady flow of wood for such essential industries as Pulp and Paper, and it makes possible the many modern conveniences that spell better living for millions.

These benefits will last only as long as we continue to maintain and improve our timber resources through good forestry practices.

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We have cruised over 2,200,000 acres from Maine to Central America; machine planted 1,000,000 trees.

His Wooded Acres

(*From page* 54)

loaded for Scotland. I know of a company in southeastern Pennsylvania which purchases pulp from Sweden. Yet my maple and spruce grow, fall, and rot unused.

The most financially remunerative aspect of my forest land ownership has been the sale of sawlogs from mature stands. At the end of 1951, after five years of ownership, the harvesting in mature stands which is needed to ensure the maximum net increment, will have paid all the taxes to date and built up reserves for seven years in advance. To cover expenses further cuttings of sawlogs will not have to be made until 1959. In making these sales I have tried various methods with the following results.

My first try was to log an old sugar bush of large and very fine maples. Every phase of the work was contracted and yielded a net stumpage of $35 a thousand board feet. This high yield was somewhat balanced by two factors. First, I had to supervise the operation and therefore could not keep another job. Second, in the eyes of the law I became responsible for the contractors and either had to carry expensive insurance or take an intolerable risk.

My next move was to set up a small sawmill and produce lumber. The gross returns from this became excellent. However, the problems of capital, labor, insurance and markets require for solution a larger operation than my land can support.

Thirdly I joined the Otsego Forest Products Cooperative at Cooperstown and sold this group stumpage. This method of sale has been by far the most satisfactory.

In this operation I have found cause for disagreement with the selective system of cutting, even though I realize that I am in a minority. The following remarks are based principally upon observations in my own woods. I do believe, however, that they have a wider application; and that the supersanctimonious halo glowing about selective cutting has to some extent blinded both foresters and conservationists to conditions as they exist in the field.

This system removes, at each cutting cycle, the mature, dominant trees

(*Turn to page* 58)

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Logging is carried out on both company-owned and forest service lands without differentiation of systems for either type of ownership. In other words, the company is harvesting its own timber on the same standards as the government's.

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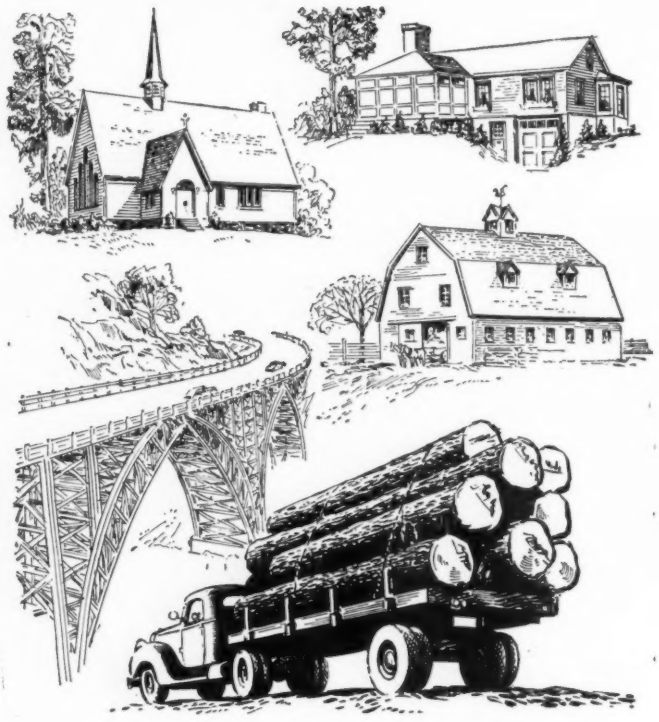

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His Wooded Acres

(*From page* 56)

and counts upon those which were hitherto over-topped to fill in and thereby create an all-age forest. The variations upon this idea are infinite; but the fact is that either you aim at growing northern hardwoods in the shade or you do not. I think it a poor idea.

My belief in the need for heavy cutting was further confirmed by examining the trees which, under selective cutting, would be expected to become the crop trees. I made this check in the best stands just coming into sawlog size.

The cherry and white pine were absent in the understory, an indication that unless light were allowed to reach the forest floor, these valuable, fast-growing trees would disappear from the stand. The ash and birch had long boles reaching for light but crowns too short and narrow to support the roots. Invariably their growth rings were microscopic and their heartwood in decay. Even such tolerant species as maple and beech showed the ill effects of suppression.

Therefore northern hardwood types must be managed so that the final cuttings are heavy enough to allow the growth of seedlings without overhead shade and so that the suppressed and defective members with which they are cluttered can be eliminated. Otherwise their condition becomes, with each cutting cycle, more like that of any picked-over woodlot. For this reason I do not try to sell forestry by that childish and hackneyed phrase, "Have your cake and eat it too" because it has a false implication that there is not involved an inevitable outlay in time, money, effort and ability in order to achieve a sustained and maximum yield.

This conviction makes the controversy about the public regulation of cutting practices appear somewhat trivial to me. The persuasion of landowners to adopt what are vaguely and somewhat wistfully known as good cutting practices is currently and wrongly emphasized when a more urgent need is for efficient logging, milling and marketing. For example on a test area I once instructed the cutters to fell every tree that was worth skidding out of the woods, and

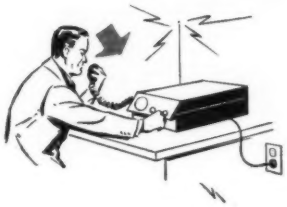
(*Turn to page* 60)

Simplified

2-WAY RADIO

HANDIE-TALKIE* Portable

logging and maintenance tool



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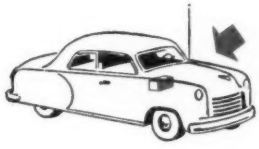

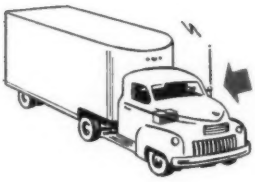

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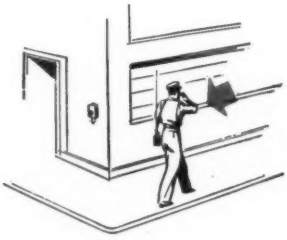

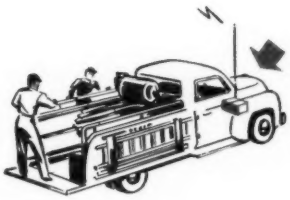

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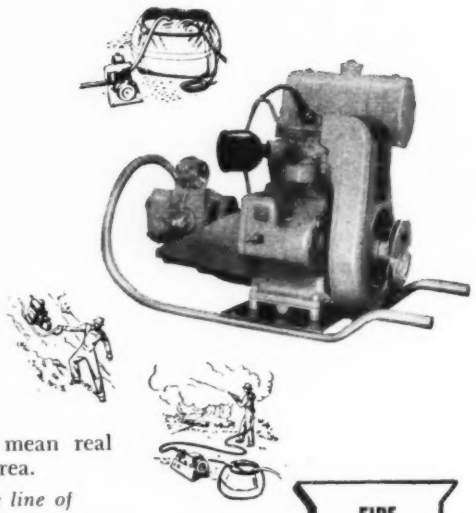

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In Business to Stay

ST. PAUL & TACOMA LUMBER COMPANY
TACOMA, WASHINGTON

Continuous Operation Since 1888

His Wooded Acres

(*From page* 58)

was later congratulated by a competent forester on the fine job of selective cutting that had been done. He was, in fact, admiring the stocking of cull trees whose removal should have been the first object of management.

Another corollary of my experience is that real forestry demands an investment beyond acquisition and taxes. The mere shuffling about of ownerships between federal, state, and private interests represents no net gain for conservation and tends to divert attention from a fact which should be very clear to everyone who would own, manage, or advise about forest land.

For example I had the choice of cutting a stand of 350-year-old hemlock clear and receiving $2025 in stumpage or making a shelterwood cutting and receiving $1539. I chose the latter; and the difference—$486—is now invested in 36 thousand feet of saleable timber with the hope that seedlings, growth, and rising prices will more than compensate the risks of wind-throw, decay, and falling prices.

If I would go beyond the mere passiveness of conservative cutting and practice the silviculture needed to put my land under intense management, the money must be borrowed or accumulated elsewhere. It will not come from the sawlog trees whose growth just about pays the current expenses. My small forest, in short, cannot lift itself by its own bootstraps.

Such are the problems and choices of forest ownership. The rewards, money balances aside, lie in the fascination of control over a living entity. Its infinite variety of growth and change comes from an older past than the forester knew and goes into a future beyond his years. It is a throbbing, immortal part of our kind but changeful earth that fills us with wonder, pride, and deep humility.

With such thoughts have I often tramped through my woods in all seasons and weathers; have often looked at them through sunshine, rain and snow, and murmured a favorite line sung by Virgil's shepherd of long ago:

Mihi placeant ante omnia silvae.

(Before all else my delight is in the forest.)

Your Shade Trees

(*From page* 17)

important point—drainage. No matter how carefully we select our tree, plant, fertilize, cultivate and otherwise tend it, our efforts will go for naught if it has wet feet. If one is not sure that his soil is well drained, it is best to err on the safe side and place several inches of gravel below the planting bed—making sure that this collection basin is drained away from the site so that water cannot stand beneath the tree.

Set a tree as nearly as possible to the exact depth it grew before being moved. If the planting pocket of good soil has been properly prepared and leveled off at the proper depth, we can set our tree and spread out the roots in a normal manner. Any broken or bruised roots are cut off cleanly and fine topsoil is worked in around them so that each root is individually packed. When the roots are well covered, the soil is tamped to prevent air pockets. After this, the hole is filled with water and allowed to settle. The hole is then completely filled with topsoil without further tamping and a slight depression or saucer is left around the tree to facilitate future watering. In late fall or winter planting, it is just as well to omit the saucer as there is some danger of ice forming in the depression and injuring the trunk. If the soil is relatively dry, continued periodic watering will be necessary until the ground freezes.

It is good planting practice—and more important in the fall than spring — to provide a protective mulch of at least three inches of peat moss, straw, leaf mold, or well rotted manure over the entire root area of transplanted trees. The mulch tends to keep the soil warmer, retards rapid changes in temperature and cuts down evaporation.

Pruning is a necessary part of the planting operation to compensate for root loss invariably suffered no matter how carefully the moving has been done.

Unless a low-headed tree is desired, the central leader of a shade tree should never be cut since such pruning would tend to spoil its ultimate shape, would detract from a strong branch structure and perhaps cause a wound which would heal with difficulty. With the lateral branches these objections do not hold true. Side pruning brings the remaining branches

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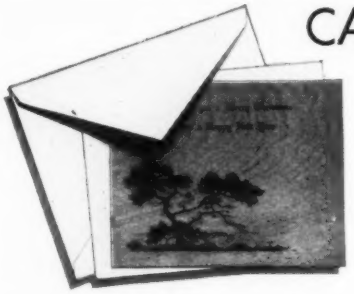

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and twigs closer to the main line of sap flow and provides a slender compact head which will readily branch out when growth starts. Don't make the mistake of pruning out the inside of the crown and leaving a few buds on the ends of the branches. This makes circulation difficult and increases the danger of sunscald and borer infestation. We must remember that the only branch on a young tree which has a good chance of remaining permanently is the leader; the laterals will die from shading or will need to be removed to shape the tree.

It is well to protect the trunks and larger branches of transplanted trees by wrapping them with burlap or heavy, treated crepe paper. The wrapping retards transpiration and prevents desiccation, prevents sunscald and helps to keep out borers. Tests have shown the treated paper to be superior to burlap.

Our tree will need some kind of support until its anchor roots become established. Perhaps the simplest type of bracing for a small tree is a stout stake driven into the ground next to the tree and to which it is attached by means of some binding material, such as soft rope or a wire which has been run through an old piece of hose to protect the bark. Larger trees are preferably guyed three ways with cable or wire; fastened to the trees with lag screws and to the ground by anchoring to buried logs or deadmen, as they are called.

And now our tree is planted, pruned, mulched, wrapped, and staked. Barring unforeseen troubles and with a little, intelligent care it will reward us richly with its shade and beauty.

Mexico's Timber Riches

(*From page* 22)

wrought in the accessible forest lands of Mexico, it is not surprising that the government will maintain strict surveillance over the newly-opened regions in the south.

If you have acquired a timber tract in Mexico and you wish to begin business, the first step would be to get a forestry engineer to make a "cruise"—a survey or inventory of the standing timber. This survey would be submitted to the Forestry Department. When the "cruise" is received, the Department sends an

(*Turn to page* 64)

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the dramatic, human story of fifty years of conservation, forestry and the wood-using industries—from timber as a mine to timber as a crop . . .

THIS fascinating, factual history spans the years from the days of migratory lumbering to the present, and recounts the events which led to the rescue of America's woodlands and the development of a new, democratic system of forestry. Here are some samplings from the book:

"Gifford Pinchot and I looked at the economic side of the forest picture through different glasses. He saw an industry so blindly wedded to fast and destructive exploitation that it would not change. I saw a forestry economy overburdened with cheap raw material. Mr. Pinchot saw a willful industry. I saw a sick industry."

"One wise old logger said that plenty of trees would be grown when they were an insurable fire risk and you paid only a fair tax on what you got for the crop."

"The steady expansion in wood uses and technologies is the strongest ally of forestry in the U.S."

These are but a small foretaste of the book whose every page has something authoritative and fascinating to say to everyone whose livelihood or interest is forestry or the industries. The author was Chief of the U. S. Forest Service for eight years. Since 1928 he has been Secretary of the West Coast Lumbermen's Association and he is now the Chairman of the Board of the American Forest Products Industries. One of the foremost authorities on the subject, he is respected and known both by government foresters and leaders of industrial forestry.

You will want to read ALL of

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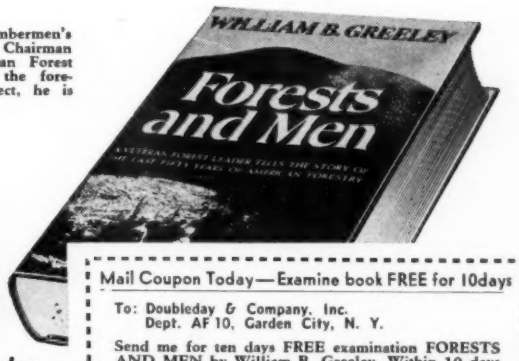
Partial contents: The Saga of Free Land and Timber . . . Ground Swells of Conservation . . . The Great Crusade . . . Teachers or Policemen in the Woods . . . The Forest Balance Sheet . . . and ten other great chapters. Indexed.



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Borg-Warner Corporation, New Castle, Indiana

Mexico's Timber Riches

(*From page 62*)

official to recheck the land. If the title and boundaries are found to be in order, and the volume of timber is established, the Department issues an exploitation permit. Once the permit has been granted, the producer applies for "guias forestales" documents which cover the transportation of the product from point of shipment to destination. Taxes are paid when application is made for the "guia," a specific one of which is issued for each type of timber—cedar, walnut, mahogany, etc.

A large proportion of Mexico's timber lands is still publicly owned, but several large tracts of the best timber are owned by American companies. The largest such lumber company now operating is the American-owned Compania Maderera de Durango. Another important company is the Compania Maderera de Chihuahua. But, now Alfredo Medina has emerged head and shoulders above the rest of the operators in Mexico with his Yucatan and Tropicales companies and other Mexicans are making a bid for native riches.

Alfredo Medina has been one of the most far-sighted men in Mexico about this. Besides utilizing the pulp for paper, at the Colonia Yucatan which is one of his tremendous operations, there are huge plants producing plywood, school desks, knock-down furniture and prefabricated houses.

Medina is outstanding in Mexico for having accomplished the "impossible." His mahogany production center Zoh Laguna—which means "Dry Lake," was actually founded by air and once discovered he created an outlet by clearing a 150-mile road to the tiny Caribbean port of Chetumal.

Things are easier now with the Christobal Colon cutting its vast swathe through the rich country and with the Southeast railroad ties laid firmly into the virgin forests. And, it is to be expected that the United States will very soon be reaping some of the rewards of the area.

It means very good business for the United States, which has been the principal source of supply of machinery and equipment used in the lumber and lumber-related industries.

For Mexico, it is a dream come true.

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A. KOROLEFF

with the collaboration of
J. A. FITZWATER

Here is a practical, simply written handbook for the profitable use of forest land. If you own, manage, or plan to acquire forest property you should have a copy of MANAGING SMALL WOODLANDS — the guidebook to woodland improvement and harvesting. Learn how to make your woodland pay cash dividends.

A. Koroleff, Director of Woodlands Research, Pulp and Paper Research Institute of Canada, and J. A. Fitzwater, formerly chief of the division of state forestry, U. S. Forest Service, have spent many years in woodland management work. They are recognized authorities in this field.

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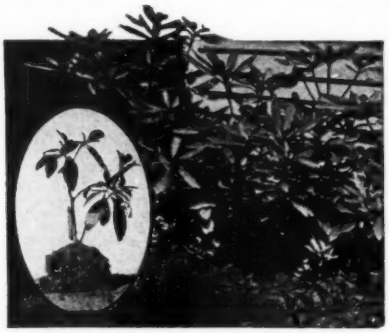

Photo: Rhododendrons planted 3 years. Inserts: Kalmia, on arrival.

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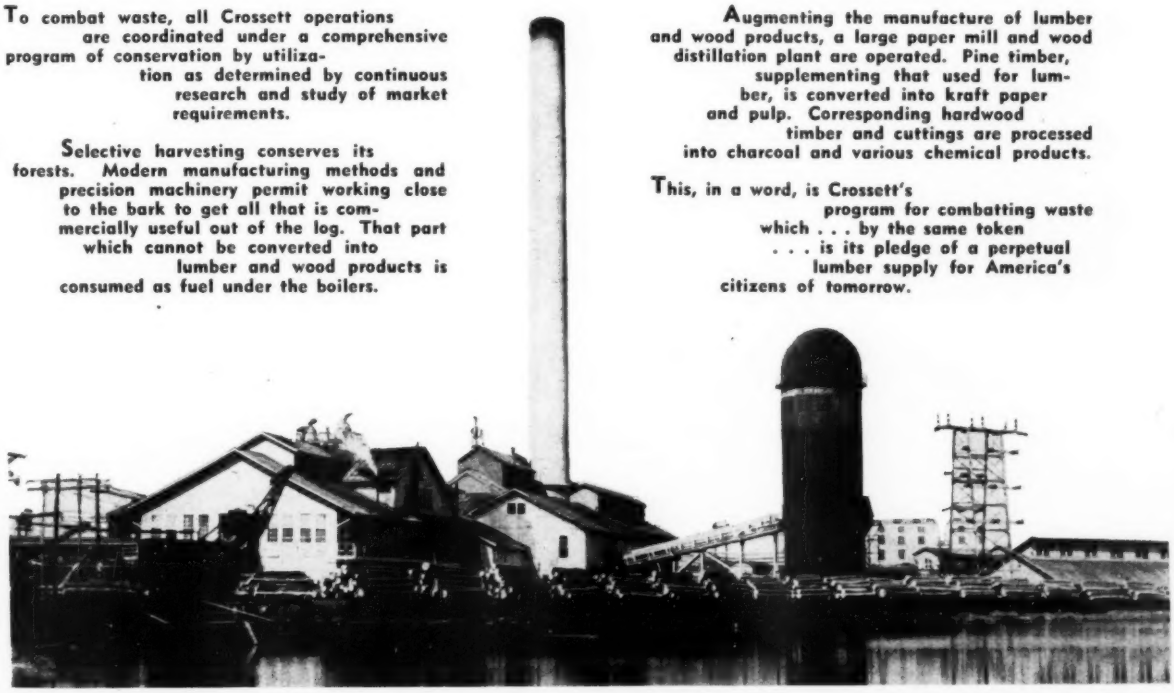

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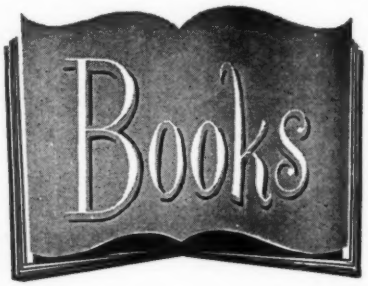
4. Ask about the law before burning grass, brush, fence rows, or trash.



When ordering books—any book—remember that your AFA membership entitles you to a ten percent discount. Order through the Book Department, The American Forestry Association, 919 17th Street, N.W., Washington 6, D. C.

The Conservation of Ground Water, by Harold E. Thomas. Published by The McGraw-Hill Book Company, New York, New York. 327 pages. Price $5.

Presenting a survey of the present ground-water situation in the United States, this book reviews basic hydrologic principles and data and provides an outlined inventory of our total water resources. Findings resulting from the ground-water development survey in over 70 areas in 35 states is discussed, distinguishing the main types of problems and giving light to what has been or could be done to improve each situation. A series of maps shows the ground-water situation over the country, including areas of over-draft and salt-water intrusion. The survey, from which this volume resulted, was made under the sponsorship of The Conservation Foundation, an independent, nonpolitical organization established in 1948, in cooperation with federal and state departments and private organizations.

Genetics in Swedish Forestry Practice, by Bertil Lindquist. Published by Chronica Botanica Company, Waltham, Massachusetts. 173 pages, illus. Price $3.50.

An English edition of a work first published in Sweden in 1946, the book gives a complete review of the intensive research work on the races and genetics of forest trees in Sweden during the past ten years. Discussed are objects, methods and initial results of forest tree-breeding work, with special regard to practical forestry.

Dollars and Decay

(*From page* 29)

drained upland situation on a farm, may well last several times as long as an identical post set in a poorly drained low lying site on the same farm. It is for this reason that universally applicable data on the life expectancy of treated or untreated wood products canot be compiled.

However, reports from states in various sections of the country all point up the value of preservatives regardless of location.

A Wisconsin report states that untreated aspen failed within two years. Treated aspen posts were still sound after seven years. An Illinois report gives the cost of an untreated post as 60 cents and its life ten years. A treated post costs one dollar and lasts 25 years. Georgia reports that the average pine post deteriorated in from two to five years. Treated posts last from ten to 20 years. A New Jersey survey estimates the expected life of untreated posts of the common non-durable species as not over five years and that of treated posts at least 20 years.

A Tennessee report states that it is "just plain horse sense to use treated wood." Data from Idaho reveals that untreated lodgepole pine posts cost 30 cents apiece in place and last three years. Cost per post a year ten cents. Treated posts of the same species which cost 43.5 cents apiece were still sound after 11 years and were estimated to last for at least 15 years. With the cost per treated post a year at two and one third cents the actual saving per post a year (without charge for replacing untreated posts) would be seven and two thirds cents. Idaho farmers use five million posts a year. If all these posts were treated the annual saving would be $383,000.

It is estimated that the railroads in the U. S. and Canada save $775,000 a day—$283,500,000 a year—by using preservatively treated ties. The saving in consumption of wood (at three cubic feet a tie) is more than 212 million cubic feet annually, or almost 600,000 cubic feet a day. About 95 percent of all ties used by Class I Line-Haul railroads are treated.

Practically all poles used by telephone and telegraph, light and power and other utility companies are now given preservative treatment before

Greetings ....
and best Convention wishes
To the members of The American Forestry Association in attendance at the Convention, Marathon sends best wishes. The A.F.A. has made an outstanding contribution to the nation and we are happy to cooperate with its program and policies. May your meeting be a great success.
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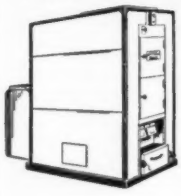

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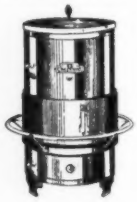

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use. The preservative treatment of poles was brought about by the same reason as was the preservative treatment of railroad ties, and as in the case of ties has resulted in the saving of millions of dollars and billions of feet of timber.

Statistics on the use of treated material other than railroad ties and poles are not available, but it is safe to say that a large part of the more than 350 million board feet of lumber and construction timbers given preservative treatment by the commercial plants in 1949 were used in the construction of bridges, trestles, crossings, loading platforms and buildings erected by railroads and utilities.

If you are a farmer or a country home owner and are about to repair or build a fence using wood posts and/or lumber, or erect a building where a part of the structure is exposed to decay, or if you are a country or urban dweller about to repair a building where some of the wood is subject to decay, take a tip from the railroads and the utilities and:

1.) Contact your state or extension forester, the nearest forestry school or agricultural college, your county agricultural agent, or private consulting forester. Several bulletins are available outlining practical methods of treating posts and other material on the farm. Cooperative treating projects have been set up in many localities, and it is possible that you can avail yourself of the facilities of one near you.

2.) Visit or write the nearest commercial wood treating plant. (A list of plants nearest you may be had by writing to the American Wood Preservers Assn., 839 17th Street, N. W., Washington, D. C.)

3.) Remember that in the vast majority of instances, the preservative treatment of wood to be used in conditions favoring decay is economically sound and *will save you money.*

Rivers at Our Door

(*From page* 13)

overused range and pastures and of 400 thousand acres of forest range on the National Forests; digging 78 thousand new wells; planting five million acres to timber; and putting shelterbelts on another two and a half million acres. In addition, about 1,900,000 miles of water conserving terraces would be built; 63 and a half million acres contoured and strip-cropped; 76 thousand miles of fence to control grazing, chiefly in farm woodlands; 3300 miles of livestock trails constructed on open and forested range lands to obtain better distribution of animals.

When the plan was announced in 1949 it was estimated to cost eight and a half billion dollars over a 30-year period. The federal government would have to chip in three billion dollars, the ten states in the Missouri Basin about 500 million dollars, and private landowners (who would be the main beneficiaries) five billion dollars.

Where do we go from here? There is little evidence that Congress or the

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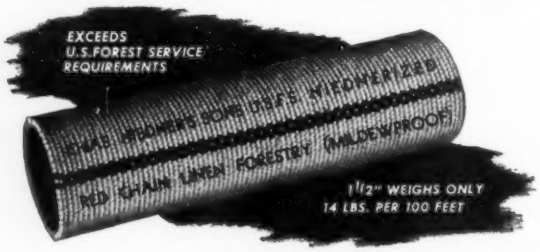

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people in the Missouri Valley are ready to underwrite the Department of Agriculture's entire program, at least in its present, highly generalized form. Even if the lawmakers could be persuaded to underwrite the federal share of the costs—a most unlikely happening during the present uncertain international situation—many of the landowners who must bear a large part of the costs would probably not be willing to do their bit. Yet, consider that the 280 million dollars the program involves spending each year by all interests is only about one-fourth of one percent of what we plan to spend for defense in the current fiscal year.

President Truman has called upon the people of the Missouri Basin to elect more aggressive Congressmen and senators in order that the region can get a break in its effort to provide a sane water resources development program. What he and others seem to want is an MVA. But the creation of a Valley Authority would of itself be no assurance that an integrated program will be adopted to lick the highly complex—and controversial—water problems in the region.

TVA has managed virtually to eradicate floods on the main Tennessee River by flooding out permanently land that used to be flooded only occasionally. The Missouri Valley, however, is 13 times larger than the Tennessee and its land-and-water problems infinitely more complicated. Furthermore, TVA has not yet undertaken systematic watershed flood control work despite its original mandate and avowed intention. So creating a Valley Authority is no guarantee that flood and other water problems will automatically be worked out in a balanced manner. Nor will they until the upstream and downstream phases are planned and applied together.

Up to now the nation's approach to its water problems has been dictated largely by political considerations. A basic need is to adopt a more scientific approach—to set up machinery which will emphasize getting the facts and interpreting them objectively, and less on "jumping the gun" before the public—which has to foot the bills—has time to find out what it's all about. Perhaps the wisest thing to do is to hold up for further study and more deliberate consideration construction of controversial big engineering projects. Meanwhile, let's go ahead with well

(*Turn to page* 71)

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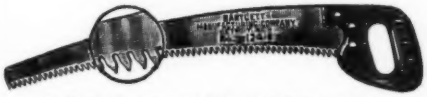
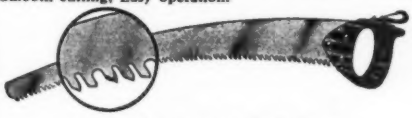
No. 124B and 114B Special Utility Saws

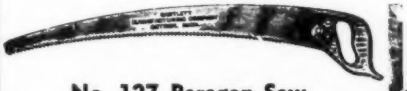


No. 124B—24" long and No. 114BD—26" have the "D" type handle, while No. 114B has the horn handle. Each Saw combines for the first time: Quick cutting, Smooth cutting, Easy operation.



No. 114 Rapid Cut Saw

This saw cuts fast as the name implies, with teeth that are made with a diamond point and a well shaped raker. As a special feature this saw can be obtained with or without the automatic "on and off" belt snap. The handle has an extra large grip permitting gloves and is comfortably shaped for the hand.



No. 127 Paragon Saw

No. 127 Paragon Pruning Saw now available for immediate delivery in 18, 22, 24 and 26 in. lengths.

The No. 45 is a bracket type Pole Saw. It has a 14½" blade, 8 points to the inch, and a tightening screw enables the operator to keep the blade at the proper tension. Furnished only with a 10-ft. 1¼" x 1⅛" pole. Weight 4½ lbs.

Other Styles of Pole Saws Also.

BARTLETT TREE TRIMMERS

This Tree Trimmer has the Compound Lever side cutting head and also double leverage due to the pulley which is attached to the curved lever. It will sever any branch up to 1¼" in diameter with the slightest effort.

Only a side cutting head leaves clean wounds. For larger limbs we recommend our No. 44 Pole Pruning Saw with 16" blade.

Sitka Spruce Poles furnished 6 to 16 ft. long.

★

Bartlett Tree Paint

For destroying and preventing the growth of wood destroying fungi and for the protection of wounds, use Bartlett Tree Paint. Easily applied with ordinary paint brush.

PORTABLE ROAD SIGNS

We offer for immediate delivery Automatic Type Tripod Signs. 3 ft. tripod holds 15" x 15" sign, two red flags. 4 ft. tripod has locking cam, 18" x 18" sign, two red flags.

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NEWS IN REVIEW

Forest Fires — With forest fire losses on National Forest lands of the Pacific Northwest already in excess of a year ago by 100 percent, U. S. Forest Service officials welcomed a slight respite early in September with several overdue rains and a higher humidity. There was hope conditions might improve, but none would be quoted on that prediction quite yet.

The driest summer since 1922 extended fire fighting crews to resort to use of flame throwers on several key backfiring operations to regain control of raging fires. One 3500-acre blaze in Oregon was so hot that a later estimate of damage was placed at 150 million board feet of killed timber.

Meanwhile, California has entered the worst part of its fire season, with losses also running much higher than usual. New Mexico and Arizona National Forest lands, driest in the history of white man with temperatures of 105 and humidity at a record 1.5 per cent, have also suffered the heaviest losses on record. The New England and Lake States areas report fire seasons no worse than normal, while the South and Southeast, despite a bad spring and summer drouth has escaped so far with damage little worse than usual.

* * *

On the Disease Fronts — Disturbing reports continue to filter in on discoveries of oak wilt, Dutch elm disease and pine bark beetle outbreaks in new areas. Instances of the deadly oak wilt have been reported this summer for the first time in 11 counties of West Virginia and in at least two counties of southern Michigan. Extensive surveys elsewhere may well uncover still other infected areas.

Incidence of Dutch elm disease in and around the nation's capital is reported more than four times greater than a year ago, with 437 cases reported by the end of August. National Capital Parks, District of Columbia and Montgomery County, Maryland tree authorities have joined forces in the fight, with Park Plant Pathologist Horace Wester directing operations. (See July, 1951 issue for more about these diseases.)

From the Texas Forest Service comes a report of 43 million board feet of sawlogs and 25,000 cords of pulpwood killed in East Texas during the past year by a pine bark beetle epidemic. More than half the sawlogs and most of the pulpwood were salvaged, however. New areas of infestation continue to crop up.

* * *

Council Officers—L. L. Bishop, executive secretary of the Texas Forestry Association, was named chairman of the Council of State Forestry Association Executives at their third annual conference, held August 12 to 15 at Lake Hope State Park, Zaleski, Ohio. William E. Cooper, executive director of Virginia Forests, Incorporated, and J. H. Kitchens, Jr., executive secretary of the Louisiana Forestry Association, were named vice-chairman and secretary, respectively.

The Council, organized in 1949 under sponsorship of The American Forestry Association, made a complete analysis of the Ohio Forestry Association as its chief item of business this year. Purpose was to point out plans of organization and operation which would benefit others.

* * *

E. N. Munns Retires — Edward N. Munns, since 1937 chief of the Division of Forest Influences in the U. S. Forest Service, retired August 31 after 39 years' service. He is a nationally and internationally recognized authority on watershed management, having served on the staff of the President's Water Resources Policy Commission last year, on the land committee of the Interstate Commission on the Potomac River Basin and as vice-president of the International Union of Forest Research Organizations.

* * *

Names in the News—Gerald E. Eddy, who in July succeeded the late P. J. Hoffmaster as director of the Michigan Department of Conservation, has announced the appointment of **Wayland Osgood** as deputy director of the Conservation Department. Osgood has been secretary of the Michigan State Conservation Commission since 1936. . . . **Theodore H. Davis**, district forester for the Champion Paper and Fibre Company, Canton, North Carolina, has been added to the staff of American Forest Products Industries in Washington, D. C., as a forester. He succeeds **James C. McClellan** who has been promoted to position of chief forester.

Rivers at Our Door

(*From page 69*)

tested watershed restoration and management measures in the critical areas where they are most needed.

This may well turn out to be a highly effective way of bringing to bear the skills, resources and interests of the Valley's seven million people in a joint federal-state-local undertaking which will produce the maximum and most lasting benefits to all segments of the public.

COMMITTEE ON ELECTIONS FOR 1952 NAMED

The Committee on Elections to nominate candidates for officers and directors of The American Forestry Association for 1952 includes Don P. Johnston, president, North Caroiina Forestry Association, Wake Forest, North Carolina, chairman: P. R. Camp, Camp Manufacturing Company, Franklin, Virginia; and C. M. Granger, Forest Service, U. S. Department of Agriculture, Washington, D. C.

The next election by letter ballot will take place December 1, 1951. Officers to be elected are a president and a treasurer, each for one year, five directors for terms of three years each, two directors for terms of two years each, and twenty-one honorary vice-presidents for one year terms. The directors whose terms expire are: Sherman Adams, Concord, New Hampshire; Stanley G. Fontanna. Ann Arbor, Michigan; William B. Greeley, Seattle, Washington; Kent Leavitt, Millbrook, New York; Walter H. Meyer, New Haven, Connecticut; Lloyd E. Partain, Philadelphia. Pennsylvania; and Vertrees Young, Bogalusa, Louisiana.

The Committee on Elections welcomes receiving the name or names of persons which any member of the Association wishes to have considered.

In addition, nominations may be made in the form of a petition signed by not less than 25 members of the Association. In submitting suggested candidates or nominations to the Committee on Elections, members are urged to include qualifications of the individuals.

Suggestions for the Committee, as well as nominations by petition, should be addressed to the Committee on Elections, The American Forestry Association, 919 17th Street, N. W., Washington 6, D. C. Petitions must be received on or before November 1.

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The "Wingmaster's" pump stroke is scarcely a flick, one of the shortest ever developed. *Twin* action bars completely eliminate binding.

Here's everything you want in a pump gun . . . at a down-to-earth price.

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Heavy steel "Vari-Weight" plug (12 ga. only), light wood or no plug give you 3 guns in 1 for different kinds of hunting.

No tools needed for take-down. You just unscrew magazine cap and lift barrel off. Extra plain barrels require no fitting.

Breech block locks into barrel extension—gives longer life, constant head space . . . another "Wingmaster" exclusive.

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Editorial

"LIVE FREE OR DIE"

Returning October 8, 9 and 10 to the same picturesque White Mountains meeting area of 1933, The American Forestry Association and the Society for the Protection of New Hampshire Forests, respectively observing their 76th and 50th anniversaries, may well take a few leisurely moments to reflect on the changes those 18 years have wrought.

With the nation in the throes of depression, the 400 conservationists who assembled at the 1933 meeting "rallied with eager expectancy to the immediate fulfillment of a practical forestry and conservation program promised under the nation's 'New Deal'," which they hailed as a "great challenge to the imagination." Two promising forestry projects were under way at the time—sparkplugged by conservation-minded Franklin D. Roosevelt—the Civilian Conservation Corps and the industrial sustained-yield timber code adopted by lumbermen under the National Recovery Act.

Historians have favorably recorded the vast accomplishments of the CCC tree army which served a worthwhile purpose during the nine years it existed. We all remember and acknowledge the enduring improvements made on the land, but perhaps more important was the salvation of millions of idle young Americans given employment and inspired with a new faith.

The forest conservation code of NRA might, too, have shared an equally outstanding niche in conservation's hall of fame, but it was snuffed out almost as soon as it was started. When other phases of NRA's program were ruled unconstitutional, the project collapsed. It did provide the spark, however, by which lumbering operations, affecting some 250,000,000 acres of forest lands, passed into a new era of conscious forest management. The code did not apply to the millions of acres of farmer's woodlots or to the pulp and paper and other industry lands, although adoption on all this was pending when the roof fell in on NRA.

Perhaps, in retrospect, these projects which AFA'ers loudly proclaimed in 1933 should not be judged too harshly by prevailing present day aversions to government subsidies. Those were tough times, and government stepped in and literally pulled a nation up by the bootstraps, creating jobs and getting money back into circulation. It demonstrated one thing forcefully, in times of stress government and industry can work together.

Now, 1951 finds us faced with a crisis far greater —far beyond the mere confines of conservation—a crisis confronting every American and spreading its tentacles across the world. Whereas in 1933 we struggled with depression and AFA'ers paid $5 for hotel room and meals, we now are being engulfed with an ugly inflation, no more emphatically driven home than as exemplified by today's $12 fee for comparable rooming accommodations in the same White Mountain area. Each American, too, while he looks back longingly on the nickle-cup-of-coffee days, remembers too vividly the bread lines, the unemployment lines, the empty purse of the early 30's. And now, while enjoying the highest income ever, he groans under a tremendous tax load and gloomily watches the purchasing power of his dollar swiftly outdistancing his ability to enjoy the benefits of modern society.

Perhaps all this, too, would be taken in its stride, except that the horizon of peace is greatly clouded with the billowing thunderheads of war, raining destruction at scattered points, but not yet amassed as a towering cold front to engulf the world in destruction.

Out of all this appears one clear-cut parallel with conditions of 18 years ago—the opportunity for citizen-government leadership around which all Americans can rally. Here it seems is one of the greatest challenges, the greatest hopes for curing our own domestic ills as well as those abroad. Here can be the tower of strength for peace, our greatest weapon, a rallied American democracy.

This task is not one alone for our public leaders, but for every individual. And is there any clearer expression on which to develop this crusade than the one adopted by the hardy pioneers of New Hampshire many years ago as their state motto: "Live Free or Die."

IMAGINE...

America without paper!

No more paper or paperboard! Not a single shipping carton or a scrap of paper for vital records and communications! Overnight, America's military effort would bog down . . . the nation's strength and security would be imperiled. Imagine the chaos on homefront and battlefront . . . without letters, orders, bulletins, plans or maps. No cartons . . . no wax or waterproof paper . . . no wrapping paper . . . no special paperboard containers to protect military supplies from rot or rust . . . *Unthinkable?* Don't take paper for granted. Anything so basic and essential should be safeguarded. America *depends* on paper! Use it wisely . . . protect its production . . . keep America strong.

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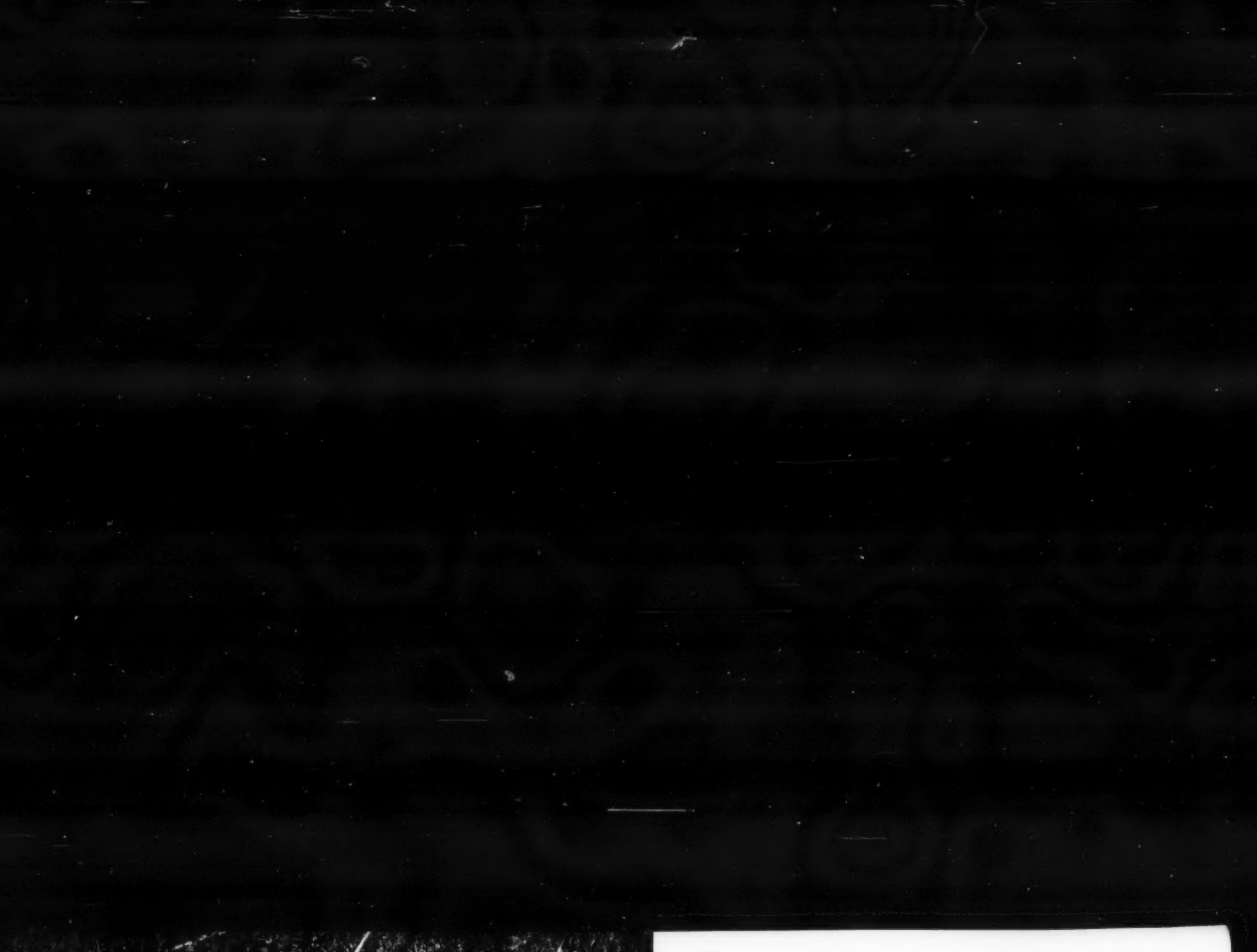
Mail Call

Mail call means so much to him. You can't know unless you've been there yourself. Back home, somebody sits down with a pen and begins, "Hi, Kid"—or, "My Son"—or, "Dear Superman"—or, "My Very Own Darling." And then, not too much later, the guy with the big canvas pouch shows up, and *your* man—if he's lucky—rips open an envelope and "goes home" for a little while.

Do you know what it's like out there, with the familiar pattern of living broken, with friends and loved ones in another world? Whether he's in combat or in training back home, he's been cut off. The monstrous monotony of fighting and waiting gives him the feel of having been forgotten. *If you could watch his face some time when he doesn't hear . . . when mail call passes him by . . .*

But when word from you makes him feel remembered and wanted, that's good. Maybe just the hometown paper, telling how Aunt Jenny took first prize with her strawberry jam. Or a box of something good to eat to share with a sidekick who wasn't so lucky this time. And best of all a letter—the closeness and reassurance and *belonging* that the right kind of letter always brings—that magic carpet trip back to Sheboygan, Brooklyn, Waterville, Four Corners.

Only *you* can put the magic in mail call. You mean to write often, but you're busy—busy?—and sometimes you forget, or put it off. *Don't.* And if you have no one in Service to write to, remember the men who have no one to hear from—and find out what you can do about it.

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